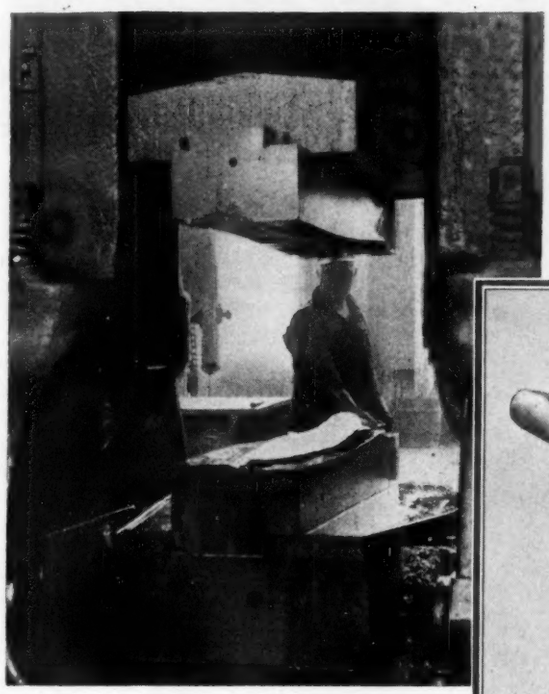
Volume 86
Number 23

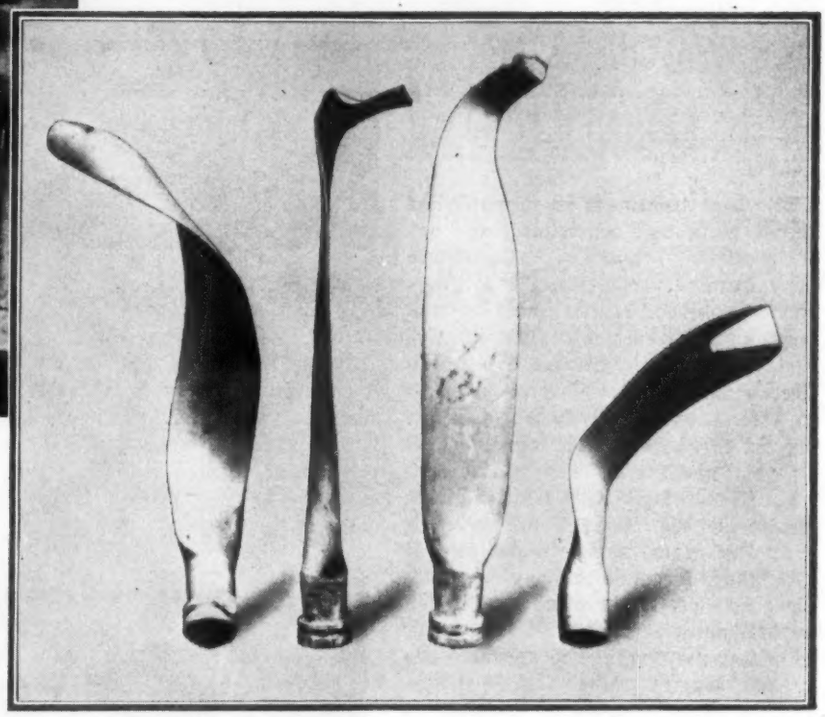
IRON TRADE REVIEW

Cleveland, O.
June 5, 1930

Strong Alloys Promote *Use of* Aluminum Forgings

Heat Treating and Aging Processes Lend High Strength to Forged Material



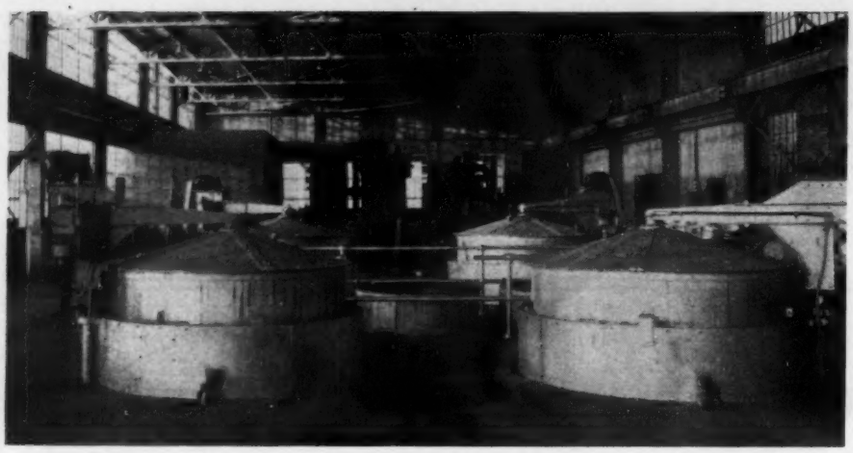


Aluminum alloy propeller blades damaged in service. (Upper left) Forging a propeller blade in the finishing die in an 18,000-pound hammer

ALUMINUM is a malleable metal and can be forged readily, but its use in forgings was limited until the advent of the strong aluminum alloys. These alloys, which represent a development of the past ten years, combine the approximate strength of steel with the lightness of aluminum and at the same time possess the other well known characteristics of the parent metal. Briefly summarized, these include good resistance to corrosion, high thermal and electrical conductivity and pleasing appearance.

In general appearance and in mechanical equipment, an aluminum forge shop and a steel forge shop are similar. However, the hammers used in forging aluminum are heavier than those employed in forging steel since aluminum alloys at their forging temperatures are somewhat harder than ordinary steel parts at their forging temperatures.

Originally, aluminum forgings were made of 17S, an alloy of duralumin type, but the aluminum forging business did not reach its present stage of development until other alloys, which had better hot working characteristics, were perfected by the Aluminum Co. of America. While 17S alloy is still employed to a limited extent, the majority of the present-day forgings are made of either 25S or 51S alloy. The relative forgeability and



Circular pit-type electric furnaces in which aluminum alloy forgings are heat treated and aged. The general view is the heat treating department of the forge shop

machinability of the three aluminum alloys are indicated as follows:

	Alloy		
	17S	25S	51S
Forgeability	3	2	1
Machinability	2	2	1

Physical and chemical properties are given in the accompanying table. The physical properties indicated in this table can be obtained only after the cast structure of the alloy has been completely obliterated by working and the forgings have been properly treated.

The heat treatment is accomplished in two steps and necessitates the use of precision equipment. To obtain the maximum properties, the forgings must be given both a solution and precipitation treatment. The solution heat treatment is carried out in an electric furnace of the type shown in an accompanying illustration, by heating the forgings at approximately 960 degrees Fahr. for 12 hours and quenching. Following the solution heat treatment, the forgings are given a precipitation or aging treatment. If 17S alloy is employed, aging takes place at room temperature; but if 25S or 51S alloy is used, it is necessary to reheat the forgings to approximately 300 degrees Fahr. for 18 hours. For the artificial aging of these alloys, either a steam tank or an electric furnace may be used.

Temperature Near Eutectic

The temperature employed in the solution heat treatment of aluminum forgings is near the eutectic temperature of the alloys. It is high enough to dissolve as much as possible of the soluble constituents but not sufficiently high to cause any fusion. In case the temperature is too high or too low inferior physical properties will result. For this reason, extreme care must be exerted in the heat treating operation, and the equipment employed must be of such a nature that a uniform heat can be obtained throughout the working zone of the furnace. In commercial practice, plus or minus 15 degrees Fahr. is considered uniform.

Aluminum forgings are more plastic

Half of a forged aluminum alloy crankcase for an airplane engine of the radial type

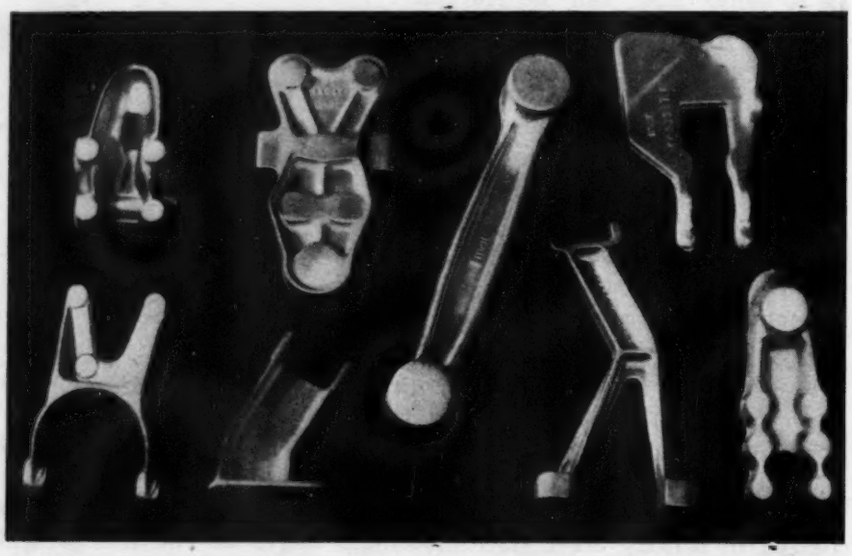
if they have received only the solution heat treatment. Because of this, straightening, compressing and sizing are preferably done prior to aging. In case the forging is of 17S alloy, any cold working must be done within the first few hours after solution heat treatment; otherwise the effect of room temperature aging will be too great to allow a large amount of cold working.

Coincidental with the development of forging alloys was the development of stock suitable for forging. Since any defect in the ingot from which the forging stock is made is greatly magnified in the finished forging, it was necessary at the outset to develop casting methods which would give a uniformly sound ingot chemically and physically. At first, these ingots did not exceed 65 pounds in weight; today 2000-pound ingots are regularly produced. It has been an aggressive development from the start; and while all the problems connected with the preparation of stock have not been solved, marked improvements have been and are constantly being made.

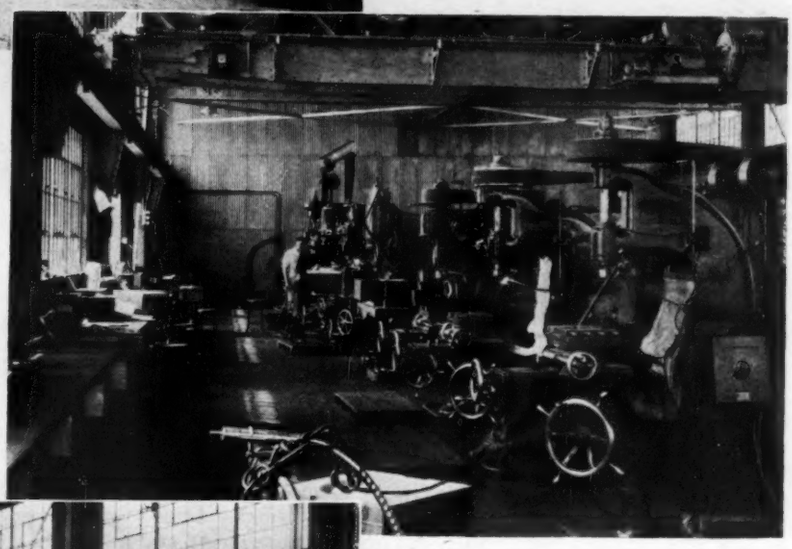
Technique Has Progressed

The development of aluminum forging technique, which includes both the development of alloys and stock, has been carried on not only in the new forge plant of the Aluminum Co. of America, at Cleveland, but in the X-ray and metallographic sections of its research laboratories there as well. Accompanying illustrations present views of the new forge plant of the company. The development has been both expensive and time-consuming, and through the co-ordination of plant and research facilities aluminum forgings are attaining increasingly high standards of quality.

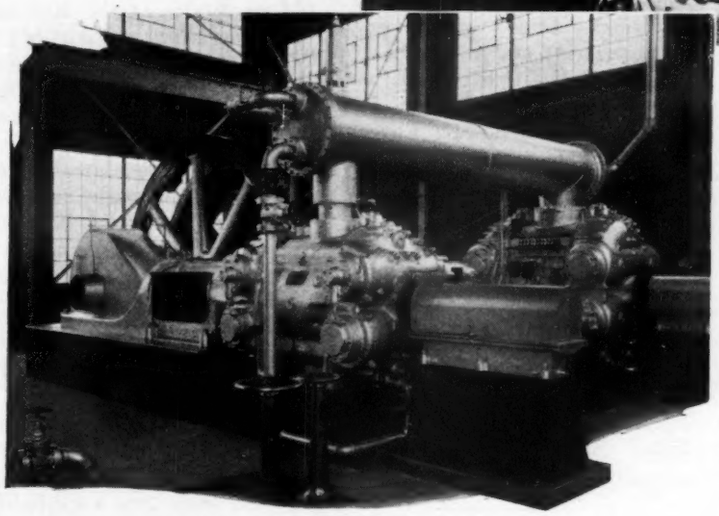
Aluminum forgings are used where greater strength and ductility are desired than can be obtained in aluminum castings and in place of castings and forgings of the heavier metals. Since a forging is stronger



Miscellaneous small aeronautical forgings formed from 25ST aluminum alloy



INTERIOR of the new Cleveland forge shop of the Aluminum Co. of America is shown at the left. Below is a corner in the diemaking department and at the lower left is shown the large air compressor, with a rated capacity of 8000 cubic feet per minute, supplying air for operating the hammers



than an aluminum casting, it can be made with thinner sections without sacrifice to strength and safety. With the section thickness decreased, a lighter piece is obtained.

In the early days of aluminum forgings the automotive industry supplied the principal market. While forged aluminum connecting rods, bearing caps and hardware are employed in many of the finer cars today the application of aluminum forgings to aeronautics has been broadened to such an extent that aviation now consumes the greater percentage of such forgings.

During the time aviation was in the experimental stage, many changes were made in design. Because of the limited production of any one type of plane, aluminum castings were largely employed. However, as the production of planes became larger and there was a greater stability in design, it was found economically feasible to forge many of the parts that were originally cast.

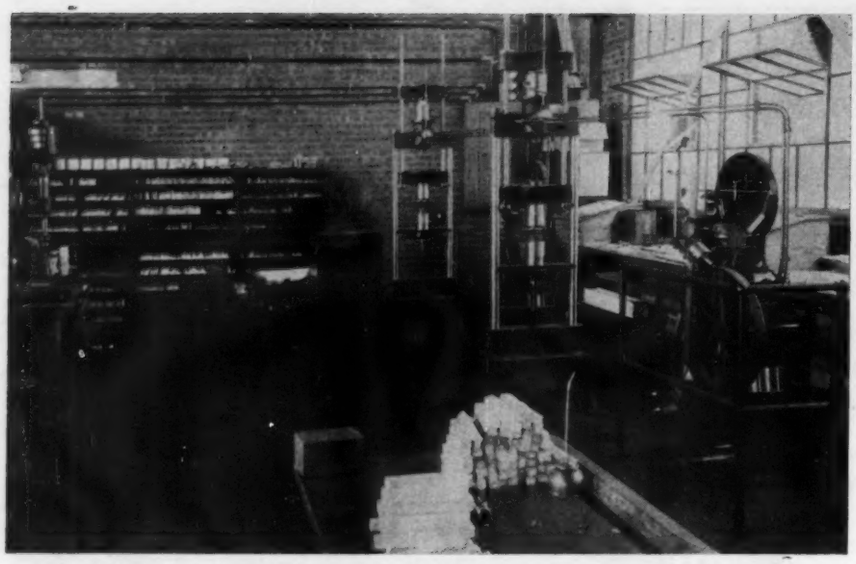
Each year an increased number of aluminum forgings is used in airplane construction. Two of the outstanding radial engines today have forged aluminum crankcases and nose pieces. A few years ago this would have been considered an engineering impossibility, and the development of the proper forging technique for such an undertaking represents a marked advancement in the art.

Forged aluminum propellers are standard equipment on the majority

Properties of Aluminum Alloy Forgings

Alloy	Approximate composition, per cent: Copper	Manganese	Magnesium	Silicon	Aluminum (minimum)	Tensile strength pounds per square inch	Yield point pounds per square inch	Elongation per cent in 2 inches	Brinell hardness, 1000 kilogram load, 10 millimeter ball
17ST	4.0	0.5	0.5	....	92.0	55,000—63,000	30,000—40,000	18—25	90—105
25ST	4.5	0.8	....	0.8	92.0	55,000—63,000	30,000—40,000	16—25	100—120
51ST	....	....	0.6	1.0	96.5	40,000—50,000	30,000—40,000	12—18	90—100

NOTES: 1. The properties given in this table are for forgings in the fully heat treated and aged condition, the suffix T on the alloy number indicating that these treatments have been made.
2. The Aluminum Co. of America owns patents relating to 25S and 51S alloys and the heat treatment processes used in connection therewith.



A view in the testing laboratory in the new forging plant, maintained to insure uniformity of all forged products

of commercial and service planes. These propellers are not only strong and capable of withstanding rain and sleet storms, but possess another characteristic which is of great importance. Often in making a forced landing the propeller strikes an obstruction. If the blade is of wood, it is immediately splintered; but if forged from an aluminum alloy, it is merely bent. Because of the ductility of the aluminum alloy blade, the pilot may be able to straighten it sufficiently to allow him to continue his flight to his airdrome. There the temporarily straightened propeller may be removed, and shipped to the manufacturer for permanent repairs.

Variety of Parts Forged

While the crank case, nose piece and propeller probably represent the outstanding applications of aluminum alloy forgings to aircraft, many of the fittings for the wings and fuselage are regularly produced in this manner. In many instances, the link rods of radial motors and the connecting rods of in-line motors are forged from aluminum alloys. At the present time the pistons are cast, but development work is now under way which may make it possible to produce this vital part of the motor as a forging. The aileron horn, control stick and fulcrum are frequently forged.

Other uses for aluminum forgings include locomotive side rods, the side bars for electric railway trucks, spray gun bodies, horse shoes, pneumatic tool and outboard motor parts, and a wide variety of miscellaneous sections for typewriters, vacuum cleaners and sewing machines. These forgings range in weight from a few hundredths of a pound to nearly 1000 pounds.

Plating Research Studies Uncommon Metals

Research covering the electrodeposition of aluminum, beryllium, boron, chromium, tungsten, titanium, vanadium, and cerium is the subject of a new booklet issued by the engineering experiment station of the University of Illinois, Urbana, Ill., entitled, "Studies in the Electrodeposition of Metals," by Donald B. Keyes, professor of industrial chemistry, and Sherlock Swann Jr., research associate in chemical engineering. The increase in the industrial manufacture of the more uncommon metals led to the study of the possibilities of their electrodeposition. The study was carried out with this industrial interest in mind. As chromium had been plated before from aqueous solution, the research investigated the possibility of plating this substance by a different method.

Report Large Ore Range Found in Finland

Considerable interest has been aroused in Finland by the discovery of an iron ore range in the northern part of the country, according to E. A. Aaltio, Finnish consul at Duluth. The fields are situated in the valley of the Tornio and Muonio rivers, in the parish of Kolari, partly on state and partly on private property.

The presence of iron ore in this region has been known for more than a century, but recently the deposits were claimed by a syndicate in Helsinki, which has carried on sufficient work to hold possession. Exploration which is not yet complete is said to have revealed ore of quality and quantity comparing favorably with that found in the great mines in Middle Sweden. The ore according to report contains 50 per cent iron, and a large percentage of it is free from sulphur.

A Finnish paper quotes a mining expert as saying that the ore of the best quality is sufficient "at least for 100 years if produced at the rate of 200,000 tons yearly, if mining is carried on only to a depth of 100 meters." This applies to only one section of the general area. Large limestone deposits are located nearby, and it is believed conditions are satisfactory for the establishment of an iron industry.

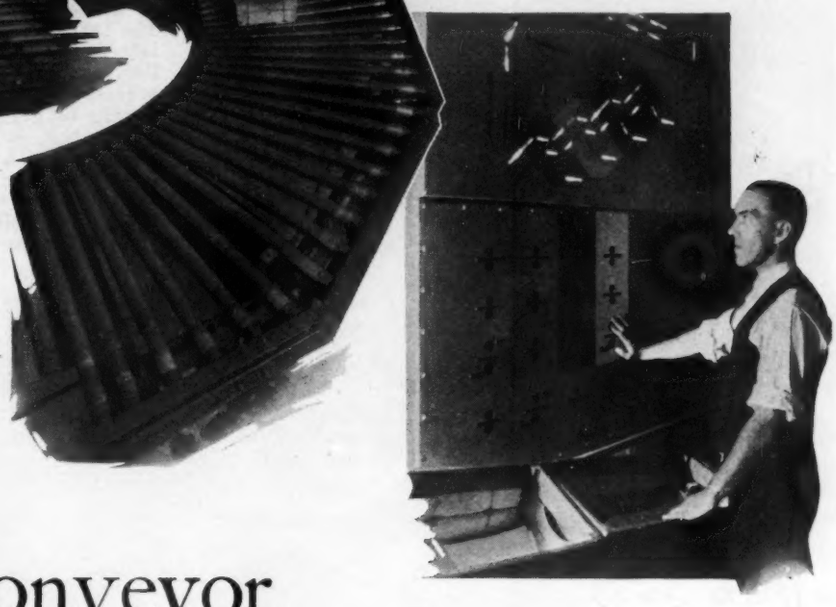
22-Ton Battery Operates Plant Locomotive

Storage batteries weighing 22 tons are required to operate the largest storage battery locomotive ever built by the Baldwin Locomotive Works, Philadelphia, and the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The locomotive has been placed in service at the Michigan City, Ind., generating station of the Northern Indiana Public Service Co. This locomotive is doing switching service and hauls coal cars from the railroad to the power house. The battery charging equipment consists of a motor-generator set which in turn is operated from 2300-volt alternating current supply lines. The batteries are charged during slack periods on the power station.

Reviews Tin Industry

Tin, the only common nonferrous metal of which the United States is the world's leading consumer and at the same time a negligible producer, is completely reviewed in a bulletin of the bureau of mines, Washington, entitled "Tin in 1928," by Charles White Merrill. The pamphlet, presenting the latest available figures of the department of commerce, gives statistics and comments on classified domestic production, imports and exports, world production and resources, consumption in tin plate, terne plate and automobile manufacture, stocks and prices, world's tin smelters, and substitutes. In 1928 the United States produced only about one-twentieth of one per cent of the virgin tin consumed. The principal supply of consumers enters the domestic market as imported refined pig tin mainly from the Straits Settlements, United Kingdom, the Netherlands, and China.

BY GLANCING at the lighted panel the dispatcher, whose position on the second floor is the heart of the entire system, can discern the settings of all switches and can determine whether distant belts are running and how many and where the boxes are that he is sending out. The dispatcher also controls a public address system by means of which he may direct instructions to any part of the large plant



A CONVEYOR line from the floor above joining the loop on the floor below makes a Y-section necessary. Note in the illustration above the 4-foot feeder belts which are placed in gravity rollers preceding the Y-sections. The center illustration shows a live roller curve adjusted so that carriers remain parallel to the conveyor when making the turn

Intricate Conveyor System Has Centralized Controls

By C. K. Pevear

Assistant Distribution Engineer, Western Electric Co.

RECEIVING, packing, storing and delivering over 9000 items of telephone equipment, ranging in size from pieces as small as pinheads to units 10 feet long, 8 feet high and 6 feet wide, and varying in weight from less than an ounce to 2000 pounds, called for considerable ingenuity in the design and operation of the merchandising department warehouse of the Western Electric Co. at Kearny, N. J. The company operates two similar warehouses at its other two plants, but the unit at Kearny probably embodies the most recent developments in materials handling.

The warehouse consists of two adjoining buildings, as shown in cross section in an accompanying illustration. The building shown at the left measures 300 feet in length by 100 feet in width, the adjoining structure or so-called crane shed being of the same size but somewhat less in height. The former is known as building 71 and the latter as building 72. Building 71 is equipped with an intricate system of conveyors running from floor to floor and traversing each floor completely.

Material received from the manufacturing department is checked and sent to storage. Storage space is provided in building 72 and large cases are delivered and removed by a special type of crane having the control cab on the hook. The entire space is indexed carefully so that any case may be located immediately. Smaller material is stored in building 71 after being checked and packed.

It is in the selecting and shipping of material where the most interesting application of the conveyor system and centralized control methods are evi-

Methods Progressing

MODERN materials handling methods have progressed to an extent where the human element is nearly eliminated, a fact brought out in the accompanying article describing and illustrating the maze of conveyors and handling devices used in the warehouse of the merchandising department of Western Electric Co., Kearny, N. J. Information is from a paper presented at the third national materials handling meeting in Chicago, March 5-7, and was contributed by the materials handling division of the American Society of Mechanical Engineers. The author, C. K. Pevear, is assistant distribution engineer in the telephone sales department of the Western Electric Co.

Carriers Traverse System Automatically

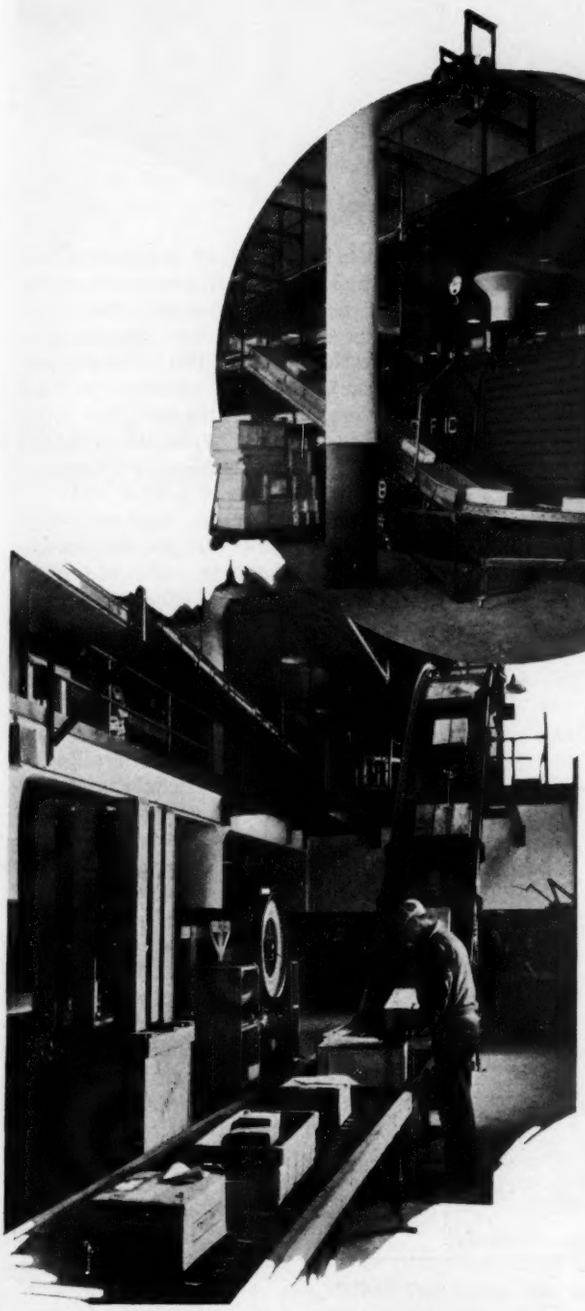
CLOSEUP of a carrier approaching a feeder belt, at the left. This feeder belt in the gravity roller preceding a Y-section is controlled by a floating roll switch in the downcoming line. The carrier, operating this switch, stops the feed belt motor which holds up carriers on the main line. It is started again by a timed relay, a process which gives the downcoming carrier a chance to get on the loop before the main-line feeder belt is started again. The oval in the center shows a packed box on which contacts are open; thus the automotic switch was not moved and the box will travel directly through to a descending belt and down past the dispatcher's position to the shipping platform

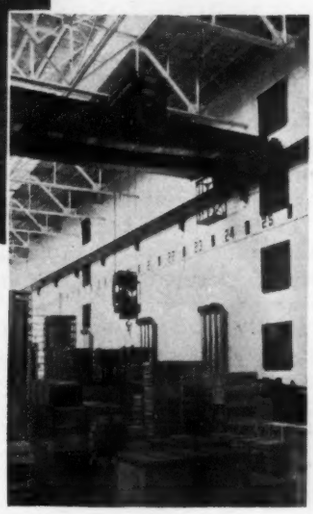
EMPTY carriers travel to the top floor and start downward, making a full loop of each floor past the broken package racks where the order in the carrier is filled. By a system of plugs and disks combined with telephone jacks, the contacts on the carrier control switches which transfer it to descending conveyors

AUTOMATIC switches are controlled by the carrier. Just ahead of each switch are two "hot" rolls, visible in the illustration to the right, connected to a 110-volt circuit. When the carrier passes over them through an arrangement on the bottom of the carrier, shown above, the circuit is completed or undisturbed, depending upon whether the contacts on the carrier are joined or not; the alligator switch ahead of the "hot" rolls responds to changes in the circuit between the rolls

Parts Handled from Storage to Shipment

AFTER the carriers and boxes pass the dispatcher, they loop around to the sorter's position where they are mechanically sorted four ways—less-than-carload, express, miscellaneous (needing packing) and carload. As shown at the right the sorter does this by pressing a pedal under the box or carrier when it arrives opposite the belt on which he wishes to sort it. This pressure elevates two short belts running at right angles between the rollers and carries the box to a belt running at right angles to the main conveyor. The circle in the center shows a car loading device known as a lowerator which is lowered by the central dispatcher; the lowerator delivers the boxes opposite the car door. The bottom of the device is covered with a hinged plate which is part of a limit switch which halts the lowering of the unit if some obstruction is present





MARKING and weighing miscellaneous packed items is shown at the left. The pusher-bar elevator in the background returns the packed boxes to the second floor where they are diverted to the shipping conveyor line. In the rectangle above is shown a part of the storage space for large switchboards and the special crane which handles them. The control cab of this 94-foot 5-ton crane travels with the hook, thus permitting the operator to spot material accurately. Numbers on the sidewall and the underside of the crane are provided to index the storage space

GATE sections, shown at the left, were developed, driven by live roller sections preceding them, and capable of being raised without shutting off the motor. Below is shown a special type of flat car bridge to permit trucking across railroad tracks and moving small loads of material to the dock for water shipment. By means of four rings on the corners the cars may be lifted out of the way by cranes

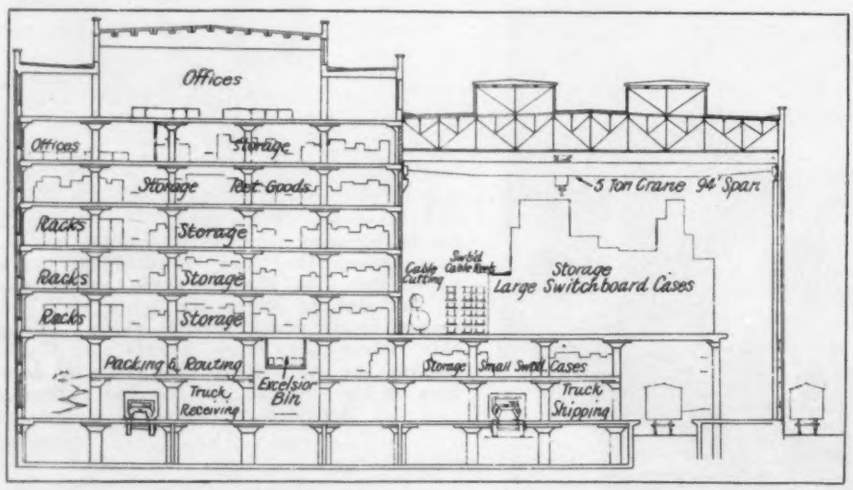
dent. A dispatcher, located on the second floor and in the heart of the entire conveyor system, receives orders for goods to be shipped, places the order in a small box container on the conveyor line passing him and by manipulation of controls on the large board in front of him can route this container to any floor of the building where the parts for the order are stored. The dispatcher's board pictures the entire system in miniature and by a system of lights the operator can tell at a glance just where the various conveyors are and in what position all the switches in the system are. In fact the dispatcher holds at his position the control for practically every conveyor, elevator, lowerator and transfer device in the building. Banks of electrical pushbuttons on the board furnish means of regulating the various elements.

Carriers or boxes are designed to trace a certain path over the system, by means of two contacts on the bottom of the box. These contacts are connected to a telephone jack in the carrier and by inserting a plug in the jack the circuit is closed; when the contacts pass over the "live rolls" automatic switches are thrown in the desired direction.

To route carriers around a complete loop it was necessary to develop a new type of live roller curve which could have its rolls adjusted as to lead, so that the carriers would remain parallel with the conveyor after rounding four curves. This was accomplished by using the live roller principle and a 2-inch belt and snubbing down every 2 feet, so that the belt could take an eighth turn and change direction almost like a rope drive.

The course of packing boxes going into a freight car and destined for some distributing house is directed by the dispatcher through remote control of the switches. Only one freight car is loaded at a time and this is done by a belt used as a "lowerator," which is lowered by the dispatcher from his position by means of pushbutton control and is recorded on his signal panel by certain lights. This lowerator, shown in an accompanying illustration, delivers the boxes opposite the car door and when a portable curve section is attached, the boxes run into the car. When the lowerator goes down, its downward movement throws a deflector across the live roller line feeding it, but the actual movement of the belt on the surface of the lowerator is controlled by a floor-operated clutch which is in control of the loading gang.

The system has been equipped with many specially designed devices to facilitate smooth operation, such as the live roller curve, sorting mechanisms, alligator switches, lowerators, etc., many of which are illustrated on these pages. Use of this ingenious conveyor arrangement has speeded up storage and delivery to a marked degree and has done away with the necessity for large numbers of laborers otherwise needed to perform menial handling operations.



Cross section showing elevations of the two warehouse buildings

Structural Steel Not To Blame for Collapse

In connection with the collapse of the framework of the Gottfried Bakery Co. building in New York, May 22, resulting in the killing of two men and injury of nine others, it has been pointed out that references to this accident as a failure of a "steel frame" are in error. A bulletin of the American Institute of Steel Construction, New York, describes the building as being of reinforced concrete construction, incorporating structural steel as reinforcement of the columns. At the time of collapse all column reinforcements, which were one piece and four stories in height, were erected and in most cases tied together by slender steel struts. These struts were used for the purpose of helping to hold the column reinforcement in position after being plumbed. In dismantling the guy derrick the derrick boom fell against several of these struts with the result that they were buckled badly, pulling the adjacent columns together and causing a general collapse.

According to the bulletin, blame for the accident should rest upon a type of design which does not properly take care of erection hazards, and not upon structural steel.

Battledeck Floor Planned in Garage Addition

A 300-car garage addition to be erected shortly for a large garage in Pittsfield, Mass., will have a battledeck steel floor. This type of floor was introduced by the American Institute of Steel Construction and consists of steel plates welded together by a self-propelled automatic welding machine designed by the General Electric Co., Schenectady, N. Y. The addition, which is for the Berkshire Auto garage, will be two stories high, and the plan dimensions will be 60 feet wide by 140 feet long. It will double the capacity of the present garage.

Iron and Steel Electrical Engineers To Convene

Technical papers to be presented at the annual convention of the Association of Iron and Steel Electrical Engineers, to be held June 16-20 at the Hotel Statler, Buffalo, have been announced. Papers will be presented at sessions to be held during the first four days of the convention.

An exposition will be held at the Broadway auditorium in connection with the convention and, with 50,000 square feet of floor space, will be the largest from this standpoint in the history of the association. Exhibitors number 142.

A diversified program has been planned for the technical sessions, with papers to be presented before the electrical engineering, safety, combustion engineering, and wire and wire products divisions. The following is the announced list of technical papers and other technical presentations which will be supplemented by general discussions on such subjects as antifriction bearings, in addition to numerous inspection trips and entertainment features:

"Electrical Developments in the Iron and Steel Industry," by Walter H. Burr, electrical superintendent, Lukens Steel Co., Coatesville, Pa.

"Shop Practices in the Iron and Steel Industry," by J. J. Booth, electrical superintendent, National Tube Co., Gary, Ind.

"Steel Mill Lighting Problems," by R. F. Sanner, assistant to the electrical engineer, Carnegie Steel Co., Duquesne, Pa.

"Industrialization in the U. S. S. R.," by Gordon Fox, electrical engineer, Freyn Engineering Co., Chicago.

"Should Universities and Colleges Establish a Safety Engineering Course in Their Curriculum," by J. A. Voss, Central Alloy division of Republic Steel Corp., Massillon, O.

"The Theory of Rolling Plastic Materials," by F. G. Gasche, combustion engineer, Bethlehem Steel Co., Lackawanna, N. Y.

"Applying the Principles of Steel Mill Practice to Arc Welding," by J. B. Austin, Una Welding & Bonding Co., Cleveland.

"Installation of Electric Skip Hoist, Bell Hoist and Stock Line Recorder at Anzan Steel Works, South Manchuria, China," by Frank Smith, Otis Elevator Co., Pittsburgh.

Moving picture—"From Raw Materials to the Finished Product," by George Richardson, Bethlehem Steel Co., Bethlehem, Pa.

"Recent Developments in Industrial Furnace Design," by G. R. McDermott, vice president and general manager, Chapman Stein Co., Mt. Vernon, O.

"Symposium on Open-Hearth Furnace Control."

"Galvanizing," by W. H. Spowers Jr., consulting galvanizing engineer, New York.

"Methods of Drawing Rods," by Kenneth Lewis, vice president, Morgan Construction Co., Worcester, Mass.

"The Latest Developments in Wire Drawing, Wire Forming Machinery and Equipment," by C. S. Arms, consulting engineer, Sleeper & Hartley Inc., Worcester, Mass.

Moving picture—"The Making of Steel Wire," by American Steel & Wire Co., Cleveland.

Moving picture—"The Story of Monel Metal," by International Nickel Co., New York.

"A Discussion of the Proposed Amended A. I. & S. E. E. Specifications Covering Electric Overhead Traveling Cranes."

"Electrical Installations at the Lackawanna Plant of the Bethlehem Steel Co.," by F. D. Egan, electrical superintendent, Bethlehem Steel Co., Lackawanna, N. Y.

Adds to Coast Plants

Expansion of the plants of the former Columbia Steel Corp. on the Pacific coast, recently taken over by the United States Steel Corp., are to be expanded by rounding out their facilities. James A. Farrell, president of the corporation, who has been inspecting the plants, announces enlargement to balance output. The company has plants in California and Oregon and mines in Utah.

Study High Temperature Strength of Steel

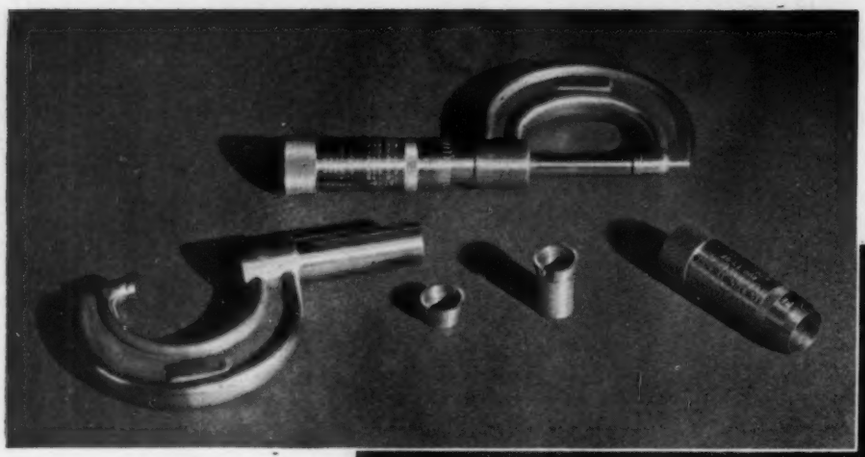
A research study investigating the tensile properties at elevated temperatures of several different heats of rail steel and some other steels has been completed by the bureau of standards, Washington, and the results published in research paper No. 164. John R. Freeman Jr. and G. Willard Quick, metallurgists of the bureau, were the authors. Special study was made of the ductility of the steels in the temperature range of 400 to 700 degrees Cent. In this temperature range it was found that certain rail and other steels showed a marked decrease in elongation and reduction of area values. This phenomenon has been termed "secondary brittleness" and the range the "secondary brittle range."

Data also are given on the temperature gradients existing in a rail during cooling in air and when quenched in water. A theory is presented showing that internal failures, such as "shatter cracks" and "hair cracks," may be due to thermal stresses developed in a steel structure while cooling through the secondary brittle range. Copies of the research paper can be obtained from the superintendent of documents, Washington, for 20 cents each.

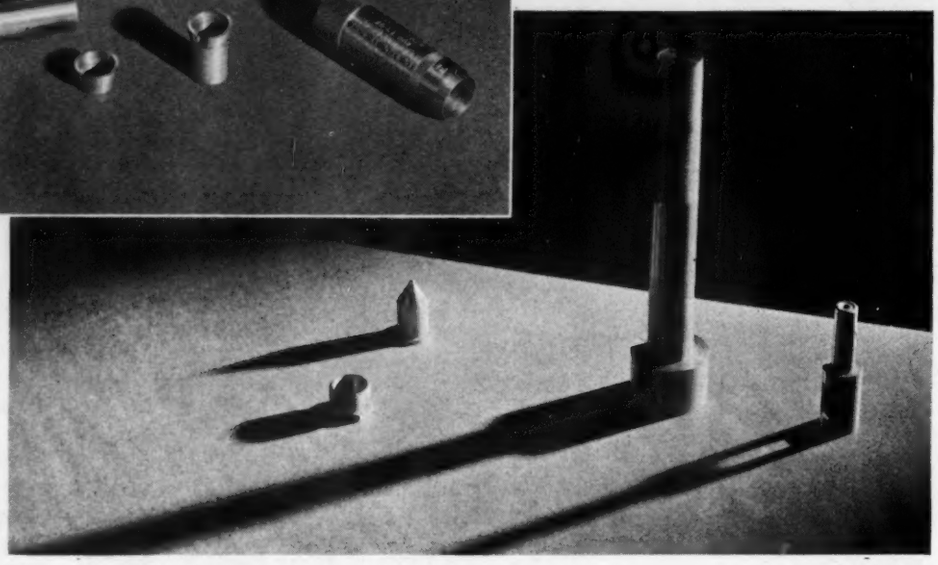
Compiles Data on Steel

A loose leaf folder, which permits product information to be embodied under one cover, is being distributed to the trade by the Ludlum Steel Co., Watervliet, N. Y. The folder contains three recently published catalogs. In one of the booklets is given the classification of tool and tungsten steels while seven pages are devoted to the effects of various elements in alloy steels. Full page photographs show pouring, teeming, grinding, wire drawing and quenching operations. Tool steels are discussed in the second pamphlet including helpful suggestions on forging, annealing, hardening, tempering and drawing. The third pamphlet entitled "Reference Book of Steel Treating Tabulations" lists important data on high-speed carbon and alloy steels and includes disk weights, temperature data, metric and temperature conversion tables, S.A.E. specifications, hardness numerals, tensile strength relations and heat treating definitions. As other products are developed by the company additional sections will be supplied.

Columbia Iron Works Inc. 4254 Vista street, St. Louis, has increased its capital $18,000 to $75,000.



Screw-machine products for bottling machinery, spark plugs, valves and pneumatic tools made from the free machining noncorrosive steel are shown below



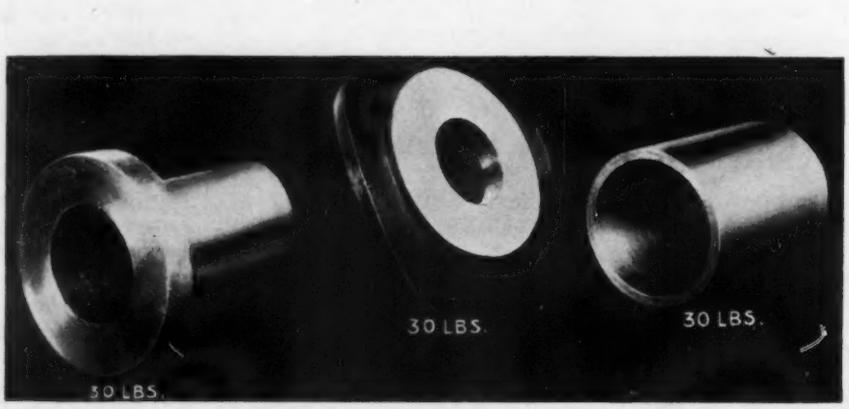
Assembled micrometer and component parts manufactured from corrosion-resisting steel are displayed in the illustration above

Develops an Easily Machinable Corrosion-Resisting Steel

CORROSION - RESISTING steels have been manufactured by the Bethlehem Steel Co., Bethlehem, Pa., for more than 12 years but this field received a new impetus recently with the development of a new corrosion-resistant steel, a product of the company's tool steel department.

The tool steel division of the company, a separate unit, was established over 30 years ago and is devoted exclusively to the production of quality tool and alloy steels. With the advent of corrosion - resisting steels, this division took up the task of developing this new class of alloys as early as 1917. At that time crucible furnaces were in operation and the first heats produced showed analyses somewhat similar to present day compositions. Conditions the following year, 1918, had a retarding influence on new development but despite this, the company was producing appreciable quantities of corrosion-resisting steel for internal combustion engine valves and spark plug electrodes. The latest types of electric arc and coreless induction furnaces now are used for melting complex alloy compositions.

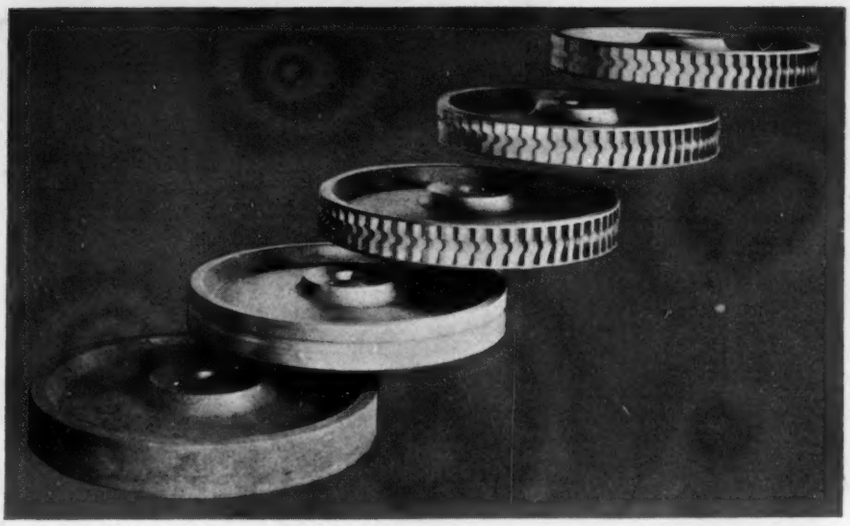
At first the chromium-iron alloys presented difficulties in manufacture because of the low-carbon content, but these were removed in about 1920 when low-carbon ferrochrome was introduced. Various combinations of carbon and chromium now are being produced to close ranges of composition, and depending on the purpose for which intended, find a variety of applications. Closely allied with the chromium-iron alloy group are nickel-chromium al-



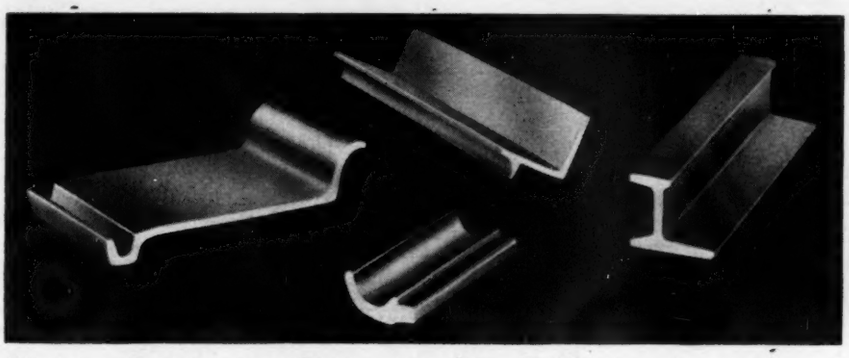
Three types of chromium iron and chromium-nickel forgings used in the chemical and oil industries

loys of varied analyses, and the one in popular demand today is commonly designated as 18-8, being equivalent to a corrosion-resisting steel containing 18 per cent chromium and 8 per cent nickel, manufactured by the Bethlehem company.

Progress of corrosion-resisting steels was limited somewhat to bar mill products until early in 1926 when the advantages of steels of this character became apparent for many special requirements. In particular, the chemical industry had demands involving equipment for nitric acid production requiring rolled plates and flanged and dished heads. The company's division at Coatesville, Pa., with other producers, pioneered in this development and manufactured a number of the original flanged and dished heads of corrosion-resisting metal, ranging from 24 to 72 inches diameter and from ¼ to ½-inch thick. The specification covered chromium-iron, low-carbon alloys and 16 to 18 per cent chromium. However, at that time successful experiments were conducted at Coatesville on compositions containing from 12 to 25 per cent chromium as well as the chromium-nickel alloy of 18-8 type.



Rolled chrome iron turbine wheel blank with four succeeding stages of manufacture



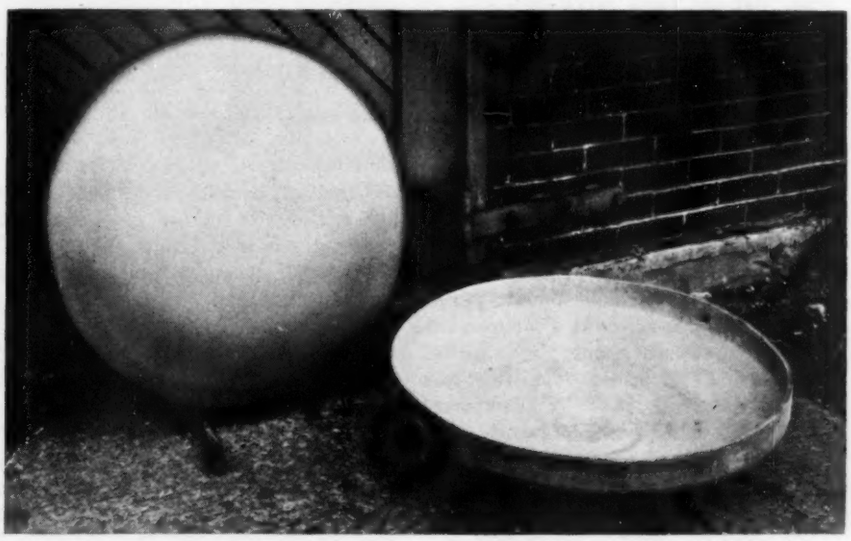
Window sash and automobile tire rim sections rolled from chrome iron and chrome nickel alloys

In this comparatively new family of alloys, problems were bound to be encountered where machinability demanded serious consideration. Products of automatic screw machines are indicative of not only fine machine work but embody rapid production with a multiplicity of operations, such as turning, drilling, threading, tapping and parting. The Bethlehem tool steel laboratories spent years in the development of a satisfactory corrosion-resisting metal that would machine like ordinary screwstock. Having this attribute, the product must necessarily combine immunity to corrosion from customary influences with desirable physical properties. The new material, known as Bethalon, has been applied successfully to such operations without change of speed, feed or depth of cut from that required on ordinary screwstock. Numerous tests have indicated that it can be smooth-turned at 200 surface feet per minute and threaded at 150 surface feet per minute.

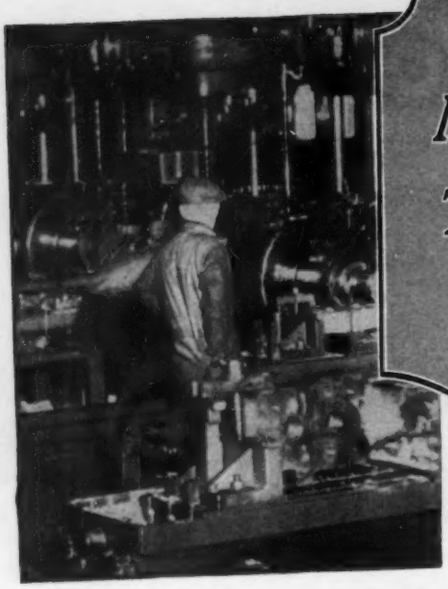
While the tool steel plant is equipped to produce tool steel bar mill products, there is a close co-ordination with other departments and with other plants of the company, affording opportunities to develop special products through central metallurgical control. As an example, large heat-treated corrosion-resisting pintle forgings were made by the press forge department for the S. S. LEVIATHAN. Rough-turned forgings weighed 3890 pounds each and were produced from a 29-inch ingot having a gross weight of 12,500 pounds. The forge specialty department also manufactures a variety of smaller press forgings of corrosion-resisting steel with aid of die and tool equipment. Such forgings are characteristic of parts required by chemical and oil industries and are subjected to corrosive influences as well as high pressures.

Rolled turbine wheel blanks pro-

(*Concluded on Page* 121)



Interior and exterior view of flanged and dished heads manufactured from chrome iron

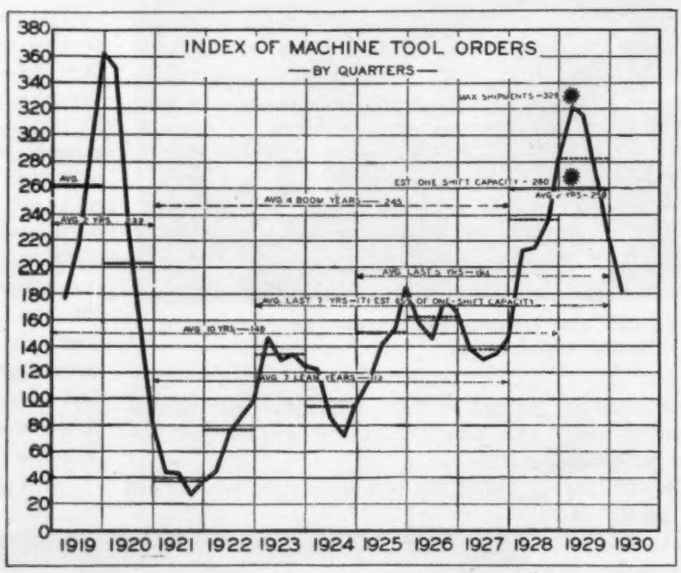


New Machine Tools and Shop Equipment

"There is always work and tools to work withal, for those who will."
—Lowell

Tool Buying Needs Stabilization

PROBABLY one of the most unstable of all markets is that of the machine tool industry, witnessed by the fact that for the first quarter of 1929 the index of machine tool orders averaged 321 on the scale developed by the National Machine Tool Builders' association, while for the first quarter of this year the index averaged only 181, representing but 56 per cent of the volume of business placed in the same period of time last year. These facts were brought out at the twenty-eighth spring convention of the association in Columbus, May 18-20, in the report of general manager E. F. DuBrul.



The accompanying chart shows the trend of this order index, by quarters, over the period of the last 11 years. The chart is self-explanatory and reveals many interesting facts concerning the machine tool industry, one of which is that business at present is proceeding at about the rate of February, 1928, except for the fact that the trend now is downward whereas in 1928 it was upward. The first high peak of the curve represents the postwar boom, following which were seven years of dull business. In 1929 the high level of 1919 was surpassed slightly in point of dollars; however, productivity of machine tools sold last year greatly exceeded the productivity of those sold in 1919. Newer designs, to get a foothold in the market, must be more productive, but selling the increasing productivity constantly narrows the market.

Dotted lines on the curve represent various averages. Thus, the average index for the four boom years, 1919, 1920, 1928 and 1929 was 245 while the average for the seven lean years, 1921-1927, was 113. The index figure for estimated one-shift capacity for machine tool building plants has been placed at 260, just over the average for the past two years of 259. The average for 1919-1928 is 149.

Speculating as to the trend for the balance of 1930, Mr. DuBrul has the following comments to make:

"It is always interesting to guess at what business is likely to be. We need not guess as blindly now as ten years ago. Statistical studies show that the industry has run quite definitely on three-year cycles with only two exceptions since 1901. It gets two years up with the third year generally less than either of the preceding two years, so that this year's business will probably be less than that of the last two years. The monthly statistics also show that the bottoms of all these depressions have come in the summer months, and that business was better in the fall than in the summer of the dull years.

"Activity this fall remains to be seen. We must remember that in recent years a good part of total demand came from the expansion of the automobile industry. That demand of course is off this year. But on the other hand a still larger part of 1929 business was placed by other industries that were modernizing their plants. Present activity of inquiry reported shows that there is much more of such business pending."

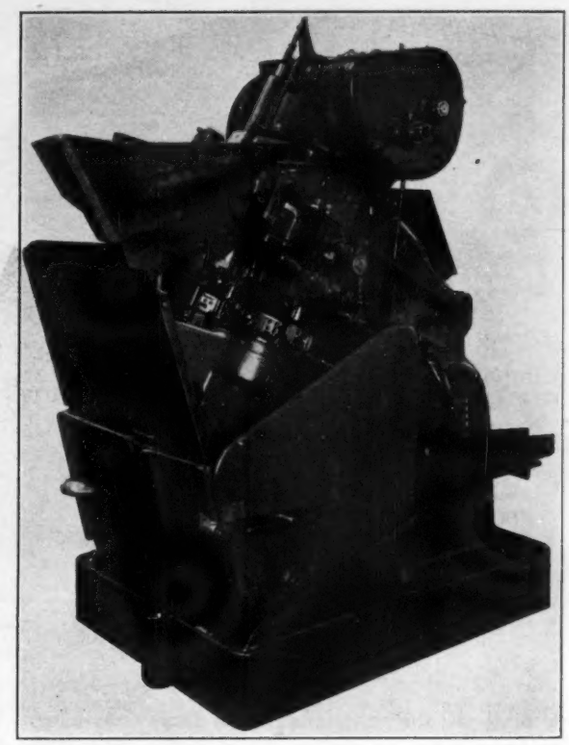
Two methods of stabilizing machine tool business have been advanced. One is to set prices at such a level that the margin of profit returned will insure a favorable and steady return on capital invested in machine tool companies over a period of years. The other is to instill in buyers' minds the doctrine of remodeling and modernizing plants in periods of depression.

Bolt Threader Handles 1-Inch Material

No. 161

Landis Machine Co., Waynesboro, Pa., has developed a 1-inch automatic forming and threading machine which will handle all types of bolts and screws. The capacity of this machine, shown in the accompanying illustration, ranges from ½ to 1-inch diameter and it will handle bolts and screws up to 6 inches in length, any length of thread up to 2½ inches and any style of point, cupper, flat, round dog-point or full cone.

The machine is hopper fed, bolt or screw blanks being shoveled or dumped by hand into the hopper. They are then delivered through a magazine to fingers which transfer them to grips in the turret chuck. The length of the finished bolts is controlled by an adjustment of the transfer bracket, this member being graduated for various bolt lengths.



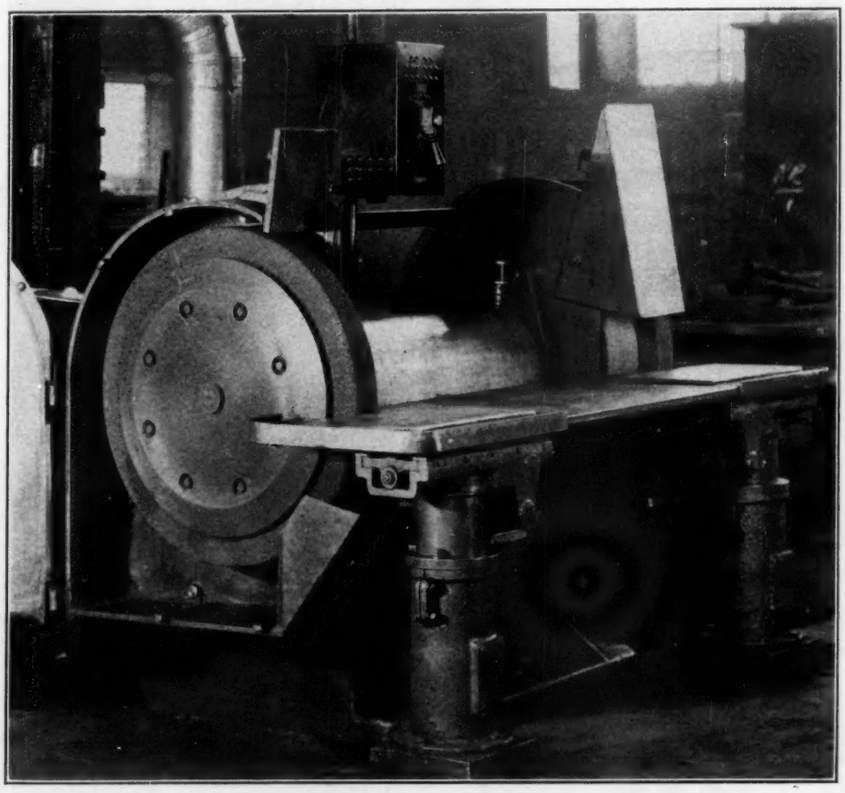
No. 161 — Automatic machine forms and threads all types of bolts and screws ½ to 1-inch diameter

Time Element is Constant

The time element for the return of the forming and threading head and the indexing of the turret chuck is constant, regardless of the diameter, pitch, length of thread, quality of material or threading speed. The instant that the forming and threading operations are completed, an automatic accelerated motion entirely independent of the cutting speeds withdraws the forming and threading spindles and indexes the turret.

The new chuck has three stations, one of which is used for unloading and loading work, one for cutting to length and forming the end of the screws, and one for threading. These operations are performed simultaneously. An ejector is provided at the unloading station to remove the bolt in case it fails to drop from the grip.

The threading head is a new development expressly designed for this machine. It is made of a high-grade carbon steel, heat treated throughout and ground. It is centrally located in the front of the machine and may be removed quickly without dismounting the yoke. A forming head of new design, threaded for easy attachment and removal is also used. Change gears of pick-off type permit changes in the speed of the forming and threading head to be made in about 2 minutes.



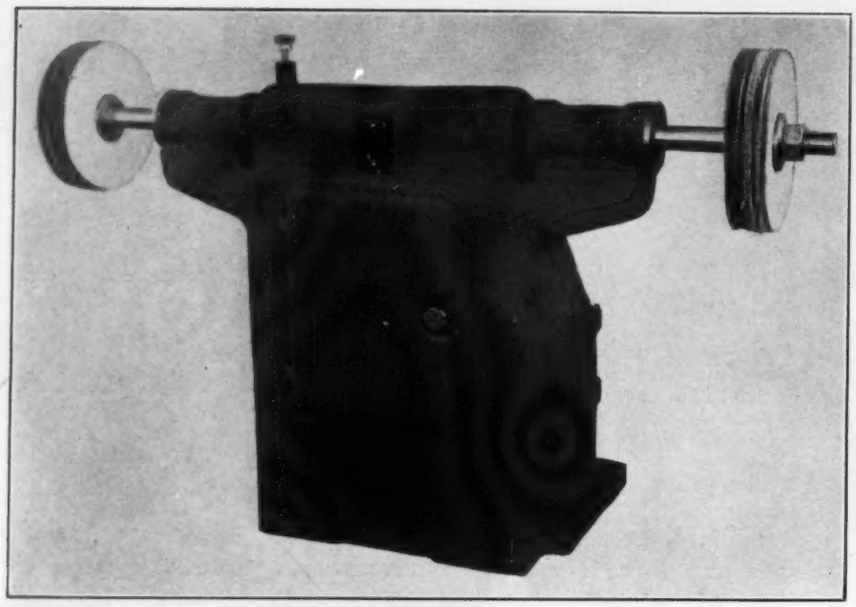
No. 162—Heavy-duty snagging machine is equipped with large work table to accommodate grinding of bulky castings

Snagging Machine Grinds Large Material

No. 162

Ransom Grinding Machine Co., Oshkosh, Wis., recently has built a heavy-duty, high-speed snagging machine with an unusually large work table. The table of the machine shown in the accompanying illustration extends 16 inches back from the wheels, and is approximately 85 inches long. The plates on top of the table may be moved in and out to compensate for the wear of the wheels. The table itself has a vertical adjustment which will more than take care of average needs. Holes may be drilled in the table top to provide for pry bars if required.

With the 36-inch wheels running at 9500 surface feet per minute large castings may be ground quickly. With



No. 164—Unique face design on buffing lathe permits convenient operation and more comfort for the operator

a table of this size and shape large castings formerly ground by a swing grinder can now be ground by the snagging type and large steel plates also may be ground on the machine.

Limit Switch Is Built for General Service

No. 163

Cutler-Hammer Inc., Milwaukee, is announcing a new, single-pole limit switch for general service. A small, sturdy device, it can be applied on machine tools, conveyors, and other small equipment, to start, stop or reverse the motor at its limits of travel. Two types are furnished; one with normally closed contacts which are opened when the operating roller is depressed and the other with normally open contacts which are closed when the roller is depressed.

This new limit switch is compact and well built. Double-break contacts with silver-rivet contact tips reduce pitting and insure long life. The movable contact is connected to the machined steel operating roller through a sliding shaft and a heavy bakelite strip. A knockout hole in the end of the enclosing case and accessible screw terminals facilitate wiring.

Base Design Features New Buffing Lathe

No. 164

Bridgeport Safety Emery Wheel Co., Bridgeport, Conn., has designed a new single-spindle, variable-speed buffing lathe which is intended to give maximum convenience in working. These base of the lathe is cut down straight on the front, which allows all possible working space in front of the spindle wheel to be utilized. The wheel spindle is driven by a multiple drive made up of V-belts from the motor. The motor, located inside the base, is secured in a saddle which may be swung up or down to make necessary center adjustments on the drive.

The spindle, which runs on ball bearings throughout, is of high-carbon steel, of large diameter. Spindle speeds may be varied over the speed range by changing the driving sheave on the motor to one of appropriate size. A locking pin is built into the machine by which the wheel spindle may be rigidly locked when changing wheels. The new lathe is shown in the accompanying illustration.

Flexibility Provided by Double-Crank Press

No. 165

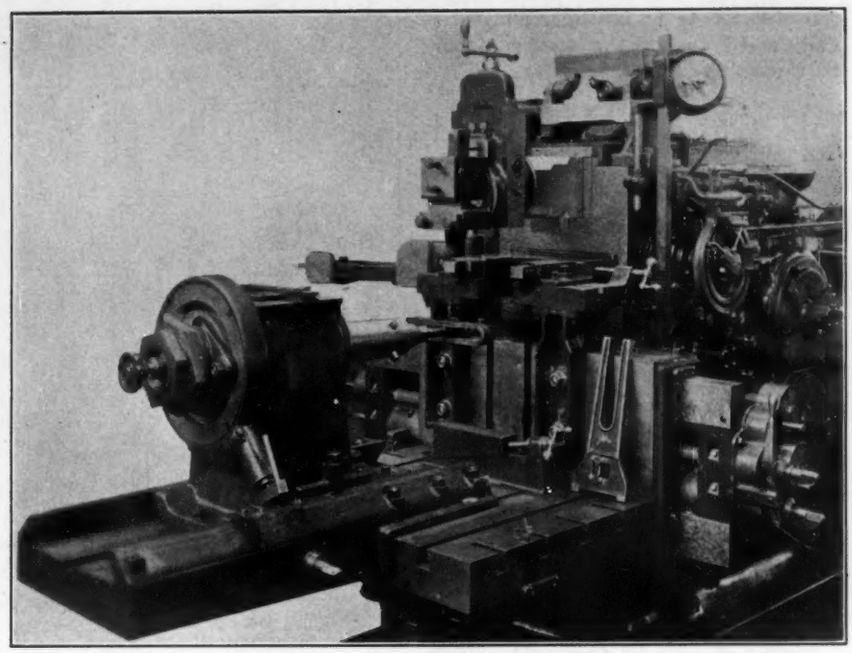
E. W. Bliss Co., Brooklyn, N. Y., is building a double-crank press with four screw slide adjustment which provides greater flexibility of operation and has a large increase in slide adjustment. The machine shown in the accompanying illustration, is known as number 8-E, 108-inch, having a stroke of 16 inches and a slide adjustment of 36 inches. A pair of nonadjustable pitmans, "solid connections," links the crankshaft to a substantial crosshead. The crosshead carries four nuts suitably geared to an adjusting motor with fine adjustment by hand. The nuts revolve in unison to advance the screws which are flanged and bolted to the slide.

The rear view of the machine, shown at the left in the illustration, shows the driving mechanism. The flywheel, which runs on roller bearings, is combined with improved multiple-disk clutch. A separate brake drum serves to keep the heat generated by the brakes away from the clutch. Re-

No. 165—Four-screw slide adjustment provides greater range of operations. The rear view is shown at the left, front view at the right

moval of the outboard bearing allows the removal of the clutch disks without dismounting the shaft.

Advantages of the new press are that pressure is applied to four points on the slide instead of two, thereby reducing the stresses and improving the alignment, and the screws become true compressive members being free from the bending moment due to friction which occurs in the screw of an adjustable connection. A further refinement of design is the use of roller bearings for the driving shaft. The bearings are fitted with "cartridge" mounting permitting the shaft and bearings to be hoisted out of the back brackets as a unit when assembling or taking down the press.



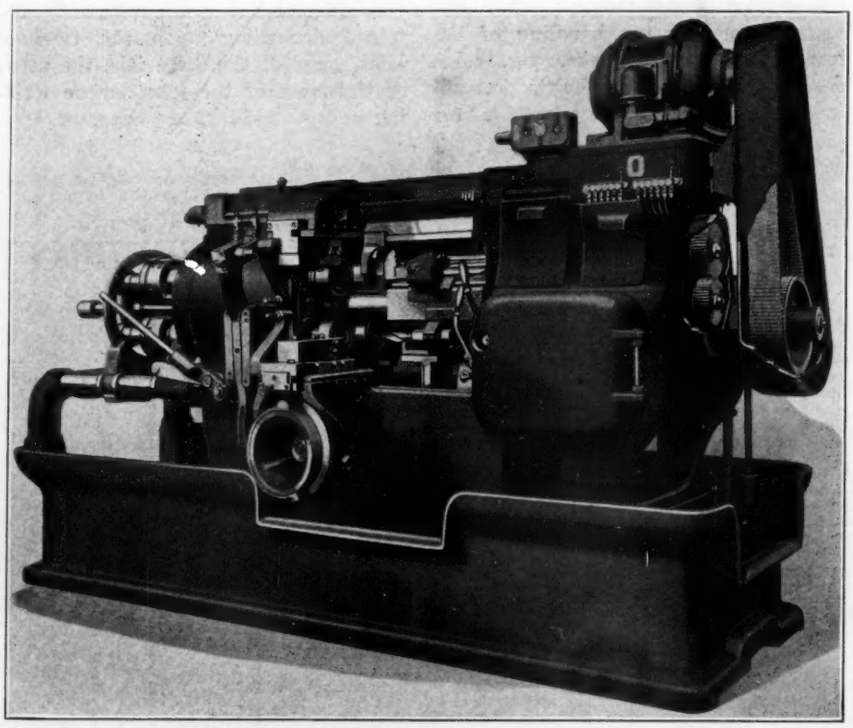
No. 167—Crosshead planer is designed to permit the maximum swing of the largest crosshead to be machined

Screw Machine Develops High-Speed Boring

No. 166

National Acme Co., Cleveland, has designed a new automatic screw machine which is equipped with high-speed attachments which permit accelerated boring or reaming operations. The machine, shown in the accompanying illustration, is a heavy-duty model, designed to give greater accuracy at continuous maximum working speeds. The range of spindle speeds is from 35 to 500 revolutions per minute while the feed box speed, with a ½-inch cam, has a feed range from 0.001 to 0.140 so that ample speeds and feeds, covering all kinds and sizes of material, are available.

There are four independently operated cross slides furnished with each machine as standard equipment. Each slide is supported on the outer edges and rides on hardened strips. End working tools are carried in a heavier main tool slide which works back and forth on the stem of the spindle carrier. The spindle carrier and main tool slide are of integral construction supported on three main bearings. There is an improved, vertical disappearing stock stop which is rigidly supported. The chuck closing stock is supported on the outer end so that no cramping action can take place. All keys in the feed and chucking slides have been eliminated.



No. 166—Greater accuracy at continuous maximum speeds is developed by new high-speed screw machine

Crosshead Planing Device Meets All Needs

No. 167

Morton Mfg. Co., Muskegon Heights, Mich., has designed a crosshead planing attachment which is designed to meet all requirements for this type of equipment. The base of the attachment, shown in the accompanying illustration, is a heavily-ribbed casting and is designed to bolt to the lower table of the machine. It is relieved on the inside end to permit the maximum swing of the largest crosshead. The headstock forms the journals for the arbor on which the crosshead is centered. When the crosshead is mounted on the arbor, it can be rotated to the proper cutting position by means of a worm and gear. It can also be unlocked so that the crosshead can be rotated by hand.

The arbor is closely journalled in the headstock and forms the support for the crosshead. It holds the crosshead central from the tapered piston rod hole and is so designed that it is self adjusting to inaccuracies in the taper. The two self-adjusting mandrels that are furnished take in the entire range of sizes and tapers. A special back bearing is provided which bolts to the saddle of the machine. It is

adjustable both horizontally and vertically and transfers the cutting strains to the column of the machine.

Mill Cut Burrs Provided in Many Shapes

No. 168

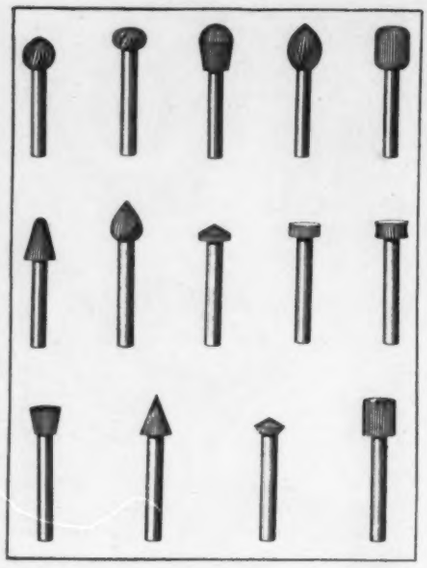
Keller Mechanical Engineering Corp., Brooklyn, N. Y., has developed a new line of mill cut burrs, in 14 new shapes as shown in the accompanying illustration. They supplement the previous line of ¼-inch and ½-inch file cut burrs made of special high speed steel and the standard line of mill cut burrs. The new burrs have a ¼-inch shank, while the diameters vary about ½-inch.

These new burrs cut faster than the company's previous mill cut burrs and they can be used on die steels, where they will leave a smooth finish. They also may be used on aluminum, brass, bronze, copper and other soft metals without clogging. They are also used successfully on wood, plaster, leather and horn. These burrs are made of one piece of steel, machined and milled between centers and ground after hardening, they are adaptable to all types of flexible shaft equipment, portable drills and stationary machines.

Friction Chuck Will Tap Large Size Holes

No. 169

Apex Machine Co., Dayton, O., has designed a large-size friction chuck for tapping, nut and stud setting which has a tap capacity of from 1½ to 3 inches. The taps are held in the chuck by means of free floating tap collets which permit the tap to follow the hole, both tap and collet are driven by the square, standard hand taps being used. This tool was developed to meet the demand for a friction chuck for tapping large-size bottom holes in one operation and for setting corresponding size studs and nuts in the shops where heavy machines are made, such as large compressors, gas engines and locomotives.



No. 168—Steel burrs are made in many designs

Trolley Built To Handle Foundry Materials

No. 170

Louden Machinery Co., Fairfield, Iowa, has developed a motor-driven trolley for use in the handling of hot iron, sand, molds, flasks, pig, coke, castings and other materials for use in the foundry. It is adaptable for use in all handling from raw materials to finished parts, being particularly adaptable to straight-line manufacture. Rope, push-button, remote or dispatch control are available. The cab is open or closed or furnished with a step-on platform when the operator must dismount frequently. The mechanical details of the trolley are designed to operate dependably under adverse conditions where dirt, dust and foreign materials are constantly present.

Welding Rod Designed for Light Work

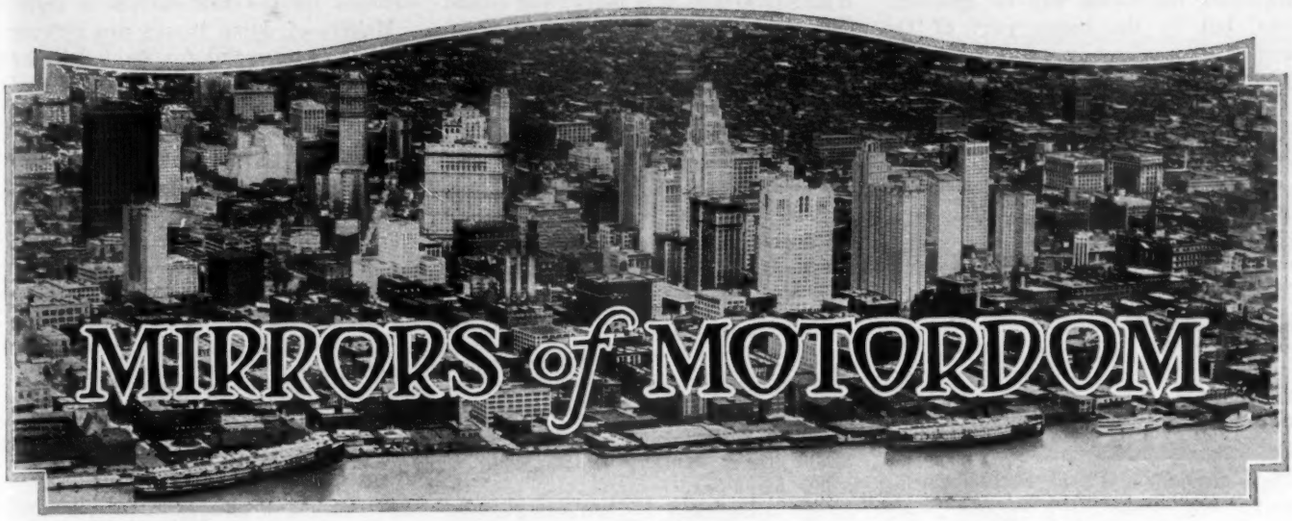
No. 171

Lincoln Electric Co., Cleveland, has developed a welding electrode which can be used on 16, 18, 20 or 22-gage material in making a lap, butt or corner weld. It is said to produce a dense weld free from pinholes. The electrode was designed to be used with a manual carbon arc and with from 30 to 60 amperes direct current, and is suitable for horizontal, vertical or overhead work.

For best results, the carbon used with the rod should be 5/32-inch diameter and should be tapered gradually from a sharp point back about 1½ inches and should be gripped in the holder about 2 inches from the point. A 100-ampere machine is desirable although not necessary and the setting should be such that the proper current is obtained with the highest open-circuit voltage. Speed of from 7 to 18 inches per minute can be obtained depending upon the type of joint, gage of the materials, the setup or tightness of the joint before welding and the skill of the operator.

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date described	Page
Bearing	Prevents leakage; is of split housing type	Westinghouse Electric & Mfg. Co.	146	May 22	76
Marking machine	Engraving work easily done; marks many materials	Simplex Tool Co.	147	May 22	77
Locomotive	Either gas or oil electric; will ride rough track	Fate-Root-Heath Co.	148	May 22	77
Multiple duty machine	Many varied duties easily performed; quickly set	Production Engineering Co.	149	May 22	77
Regulator valve	Microvernier regulator controls oil valve	Hauck Mfg. Co.	150	May 22	78
Lift truck	Hydraulic power utilized; operates quickly	Clark Tructractor Co.	151	May 22	78
Radius gages	Additional sizes provided; supplements previous sets	Lufkin Rule Co.	152	May 22	78
Straightener	Straightens two-way flats and shapes; rolls adjustable	Sutton Engineering Co.	153	May 22	78
Die head	For high-pressure work; made of special steel	National Acme Co.	154	May 29	62
Power press	Drive is adjustable; stamps lighter sheets	Niagara Machine & Tool Works	155	May 29	62
Chamfering machine	Uses internal form-ground hollow mill for chamfering	W. C. Lipe Inc.	156	May 29	63
Billet shears	Heavy-duty shears of welded construction; of alloy steel	Buffalo Forge Co.	157	May 29	63
Chuck	Accurately centers all work; has four-jaw construction	Hannifin Mfg. Co.	158	May 29	64
Sand rammer	Automatic lubrication increases life; has tight packing	Cleveland Pneumatic Tool Co.	159	May 29	64
Storage boxes	Makes parts easily accessible; boxes stack on a slant	All-Steel Equip Co.	160	May 29	64
Bolt threader	All types of bolts and screws formed and threaded	Landis Machine Co.	161	June 5	83
Snagging machine	Large castings are ground easily; has many adjustments	Ransom Grinding Machine Co.	162	June 5	83
Limit switch	Will control many kinds of equipment; entirely automatic	Cutler-Hammer Inc.	163	June 5	84
Buffing lathe	Base cut down straight in front; has variable control	Bridgeport Safety Emery Wheel Co.	164	June 5	84
Press	Has increased slide adjustments; stresses are reduced	E. W. Bliss Co.	165	June 5	84
Screw machine	Accelerated boring provided; performs reaming operations	National Acme Co.	166	June 5	85
Crosshead planer	Many adjustments available; machines large work	Morton Mfg. Co.	167	June 5	85
Mill cut burrs	Variety of shapes and sizes made of high-carbon steel	Keller Mechanical Engineering Corp.	168	June 5	86
Friction chuck	For tapping and nut and stud setting; 3-inch capacity	Apex Machine Co.	169	June 5	86
Trolley	Built especially for foundry work; resists wear	Louden Machinery Co.	170	June 5	86
Welding rod	Designed for lighter sheets; makes all types of welds	Lincoln Electric Co.	171	June 5	86



Ford Production Wavers at Top of "Free" Market

* * * * * * * * *

Buick, Chrysler, on New Models; Steelworks Rumored

DETROIT, June 3

AFTER two and one-half years Ford appears to be scraping the ceiling of his free market for Model A. Free in the sense of maximum production being readily absorbed by dealers with no more than the usual factory pressure.

In this period Ford has produced about 3,500,000 units—the 3,000,000th having been assembled March 12—and his daily rate has attained a peak of 9500 to 9600, just under the 10,000 set as a goal.

Daily output the past few weeks has fluctuated between 8500 and 9500, with the average slightly above 9000. For some models, dealer demand has not been fully satisfied, but on the whole there is increased resistance by dealers to continue their takings at the peak rate of May.

This is not to say that Ford has exhausted the market for Model A, after making only 3,500,000 of them. He made 15,000,000 Model T's in 17 years. Rather, retail market conditions being what they are, it seems that production has caught up with demand at the moment. Most of Ford's price cuts have been timed to move cars, and it may be that the $5 to $25 reductions as of June 2 recognize a slower market and are bait.

* * *

CERTAINLY to increase production, if not to maintain it at somewhat above 9000 units daily, would require forcing, a measure not even Ford would hazard these days.

As a result, there appears to be a disposition on the part of Ford to regard the crest of the present bulge as passing, and the June daily rate has been tentatively set at 9000, 5 days a week. Domestic production in May totaled about 190,000 units. For June the schedule is 180,000 units.

In this situation there is nothing particularly bearish, and the adjustment to date in Ford operations is small when related in percentage. It probably is true, however, that the retail market in the first-half year has been made to order for Ford—and in lesser degree for Chevrolet—and that any improvement in the general business situation and consequent broader retail buying will benefit the medium-price car manufacturers relatively more than Ford.

* * *

BUYING schedules of Ford for May having been based upon a daily rate of 10,000 units, which was not attained, releases for materials and parts for June shipment continue extremely scanty. Heavy inroads are to be made this month on banks of parts at Fordson, and inventories are to be sharply reduced.

On account of the holiday, an embargo on receipts at Fordson was in effect from May 28 to June 2. Nothing official has been announced, but a 2-week shutdown in July at Fordson, to give all employes a vacation and expedite plant repairs, is possible. For the other half of July a 12,000-daily rate is rumored. This would indicate Ford officials believe the retail market good enough to warrant compensating for the shutdown.

Incidentally, Ford is effecting a change which slightly lengthens the running board splash shield and shortens the front fender. The draw at the union of these parts has always been a difficult one, but a slight modification in design eases it.

* * *

CHEVROLET holds rather steadily at 4500 to 5000 units daily, 5 days a week. Like Ford, it is no longer gaining, neither is it giving ground perceptibly, but the trend through June is more likely to be down than up. May output was about 110,000 units. For June the present schedule is 100,00 units.

Parts and material specifications by Chevrolet have not over-run actual requirements, as with Ford, hence Chevrolet releases for June appear relatively broader. Its program for July is expected to be shaped up in a few days, and is eagerly awaited.

Chevrolet retail sales have been running slightly under those of a year ago, while Ford's are somewhat higher. Registration statistics for the five months ended with May are expected to show these two makers still doing 75 per cent of the country's automobile business.

On May 28 Chevrolet assembled chassis No. 7,000,0000, which was No. 1,845,938 of the current six-cylinder line. Car No. 6,000,0000 was completed June 25, 1919.

* * *

BUICK as of May 29 withdrew all visiting privileges at Flint, the first official recognition that the new models are nearing production.

For the next fortnight production

statistics for Buick will be meaningless, but in the latter part of the month approximately capacity operations, or 1100 daily, will be required to stock dealers with the new models for the expected announcement in July.

The 1931 line is scheduled to be Buick's supreme offering. For three consecutive years this onetime leading moneymaker of General Motors has been reporting declining sales, and there seems to be a determination to stem this tide with the new line.

At Flint it is said that the new line will be competitive as high as LaSalle. Presumably there will be little change in the price of all three lines, accounting the recent Marquette as the low of the Buick range. So far as can be learned, there will be no radical change in body lines.

* * *

CHRYSLER swings into production next week on two straight eights which will supplant all of its sixes except the recently-introduced low price line. It is variously reported that the larger eight will have deluxe bodies optional, replacing the Imperial line, and that later in the year a third eight to take the place of the Imperial will be brought out.

The new Plymouth four appears to be going strong, and the aggressive campaign to compete with Ford and Chevrolet is under way. The June schedule calls for 12,000 units and July for 15,000. Production of the Plymouth four and the Chrysler six, which is assembled at the Plymouth plant, is now 800 to 900 daily, 5 days. DeSoto production is up to 400 a day, 5 days, the schedule having been increased following announcement of the new DeSoto six.

Dodge is at 450 to 500 a day, 4 days, down about 10 per cent. Output of Chrysler models proper is indeterminate in view of the preliminary work on the new eights. Chrysler appears to be concentrating considerable stamping work for its subsidiary lines at the Dodge plant.

* * *

HUDSON-ESSEX simply cannot get away from the post, for a reason which the company would like to ferret out. Its operations in May did not exceed the equivalent of 12 full days, and for June are now scheduled at 10 days, at 800 to 850 a day. Its parts suppliers continue to defer releases on steel.

When Willys-Overland operates, it is on the basis of about 600 units a day, but its schedules are uncertain. Many employes at the Wilson foundry, supplying its engines, at Pontiac have again been laid off. The rumor that Willys-Overland will move from Toledo and concentrate all operations at Pontiac is again heard.

Graham at 225 a day, 5 days, is off from its recent 300 unit rate. Hupp has stepped up from 120 to about 135 units, 5 days. The new Oakland eight is doing a little better, and with Pontiac enjoys a daily rate of about 700, 5 days. Oldsmobile-Viking is staying close to 350, 4 days.

* * *

CADILLAC-LA SALLE is fluctuating considerably, having enough Cadillac sixteen orders to keep that division at capacity, but falling behind on the Cadillac eight, which rumor has it will eventually be superseded by a twelve, and the LaSalle eight. Combined operations average somewhat better than 100 daily, 5 days.

The new blood in Reo is expected to result in a change in the line, probably a series of eights, and a more aggressive production and sales policy. Reo is now making about 75 units, 5 days. Packard continues at 125 units, 5 days, and its reduction of about $400 per car in anticipation of a new line this fall is expected to maintain this rate. Lincoln is averaging 30 daily, 5 days.

* * *

THUS, the production situation is mixed. Ford and Chevrolet appear likely, at this distance, to turn in small decreases for June. Buick and Chrysler are potentially heavier producers provided they get into their stride before the middle of the month. Other makers may be counted on to reduce slightly.

June, therefore, gives indications that its output will decline mildly from the 442,630 figure for May. Last year, output shrank from 604,691 units in May to 545,932 in June. In point of movement of steel into the Detroit territory, the curtailed Ford releases may easily bring the total considerably below May.

There is considerable opinion that after the first flush of new models is past, material requirements will again slump, but a clear view of the July situation is not yet available.

* * *

BODY makers seem more active than automobile manufacturers themselves. Briggs, chiefly on Ford and Chrysler contracts, is going the strongest in months and is opening its Melton avenue plant, long closed. Murray, also on Ford and expecting to take on considerable Reo work, is the most active in a long time. Fisher, however, reflects the lethargy in most General Motors lines except Chevrolet, but has improvement in Buick business for the new models in sight.

Makers of dump trucks are slowing up, but the demand for light delivery trucks—no small portion of Ford and Chevrolet production—is holding up.

* * *

PERIODICALLY the report arises that a fully integrated iron and steel plant is to be erected at Marysville, Mich., near Port Huron. It is pointed out that waterfront property is less costly at Marysville than in the immediate Detroit district, iron ore and coal could come in and finished products move out by water, and that the site would afford easy shipment to Detroit, Pontiac, Flint, Lansing and other Michigan automotive points.

At times the more important steel producers are linked—by rumor—with this project. At present the United States Steel Corp. is mentioned. The Corporation now is putting up a tin plate and wire plant at Ojibway, on the Canadian bank of the Detroit river just south of Detroit. The rumor that work is to be resumed by the Corporation on the uncompleted blast furnaces at Ojibway is officially denied at New York.

It is generally felt that the Great Lakes Steel Corp. plant at Ecorse, just south of Detroit, is but the nucleus of a still larger project. Scrap already is being laid down for the six open-hearth furnaces, some of which are expected to be pouring by Aug. 1. The Michigan Steel Corp. plant nearby is undergoing some changes. The probable removal of headquarters of the Newton Steel Co. to its new plant at Monroe is regarded as a boost to the district. Few doubt that the American Rolling Mill Co. eventually will exercise its option and build midway between Detroit and Monroe.

* * *

IF THE new Buick is an overhead valve straight eight, as everyone believes, General Motors will have run the complete gamut of eight-cylinder design.

Both the Cadillac and the LaSalle eights are V-type, with valves as in an L-head type, and are cast in three pieces.

The Cadillac sixteen, also V-type and cast in three pieces, has overhead valves.

The Viking and the Oakland eights, while V-type and with L-head valves, are, however, cast in one piece. In the casting of a one-piece V-type engine some difficult foundry problems are met. For one thing, differing thicknesses of walls result in varying rates of cooling.

The Oakland eight and the Pontiac

(*Concluded on Page* 124)

Editorials

Steel Profits Feeling Low Prices

STEEL producers face a severe test in attempts to maintain profits during the current quarter, and recent trends in prices and tonnage indicate that results will be considerably less favorable than those of the first three months of the year. Earnings of 11 representative companies for the first quarter were off 15 per cent from the 1929 period but 70 per cent ahead of the first three months of 1928. Steel production declined 12.3 per cent and 1.6 per cent, respectively, during the initial quarter from the corresponding periods of these two years.

Prices have given additional ground during the past two months and the return to producers this quarter will more fully reflect the reductions made during March. This is in contrast to the situation in both 1929 and 1928. Last year quotations were tending gradually upward, while two years ago the price movement was extremely narrow. IRON TRADE REVIEW'S composite market average, which opened 1930 slightly above the 1928 level, has since dropped sharply to below the figure for any of the past seven years. Steel production also has been lighter than during the second quarter of 1928.

More efficient operating methods in some cases should partly offset the reduction in prices and production, but to what extent remains to be seen. Attempts to provide full operations and accompanying low costs have been a major factor in the market decline in prices so far this year. Scrap prices, despite their recent marked declines, have been slightly higher than two years ago.

Railroad Buying Short of Forecast

THAT decreased revenue and decreased expenditure usually go hand in hand is a business axiom now finding forceful expression in the railroad industry. Following a sharp drop in the preceding three months, net operating profits for class 1 railroads for April, as recently announced, show a decline of 33 per cent under April, 1929. A substantial drop in expenditures is indicated in several directions, most notably perhaps by the decline of freight car awards. Preliminary figures place these awards for the first five months at approximately 31,000 cars, or about 26,000 fewer than in the corresponding period of last year.

In this respect the railroad industry is running true to general rule. Yet this situation is particularly interesting to steel producers, for not only were the railroads last year the largest consumers of steel, but predictions of railroad leaders at the Hoover conference in Washington late last fall were that 1930 capital expenditures would equal, if not exceed, those in 1929.

In fact it was estimated by one authority that the 1930 budget for equipment would be $370,000,000, which compares with the 1929 expenditure announced later of approximately $321,000,000; and that expenditures for roadway and structures would amount to $680,000,000, making for a grand total of $1,050,000,000, against approximately $853,700,000 last year.

Total capital expenditures for the first quarter of this year, only recently announced, tended to bear out the predictions made last fall, aggregating approximately $223,700,000 against $127,000,000 in the first quarter of last year. However, much of this expenditure was made for work contracted for prior to this year. Since Jan. 1 actual contracting, as demonstrated in the matter of car awards, has been restricted in most lines so that capital expenditures over the remaining periods of the year should involve sums more in keeping with this tendency.

It is still too early to judge the degree of accuracy of the predictions made at Washington. Moreover, the drop in car buying, which has been even more pronounced, than the drop in earnings, may not be a definite index. As a matter of fact, with surplus cars of 450,000 at the highest peak since 1922, as there were in April, and with relatively little reduction since, the situation in this respect clearly has not been conducive to substantial purchases of cars. But whatever its precise bearing, the decline in car buying is significant. The goal announced at Washington last fall appears far away.

Delivery More Decisive than Price

AT TIMES prompt delivery of structural steel renders null and void a difference of several thousand dollars in price. This was demonstrated recently in connection with a school job

in northern Ohio. Between the two lowest bidders was a difference of three or four thousand dollars, but because the second lowest could meet the customer's delivery requirements—three weeks—he got the business without cutting the price.

From time to time a structural steel fabricator finds it necessary or politic to accept business at a concession in order to maintain an operation or sustain an organization. It behooves him, however, to learn all the facts in the case before cutting his own or the next bidder's price, since governing circumstances and conditions sometimes dictate the placing of the business at other than the lowest bid. The wise bidder familiarizes himself with all information possible before he takes for granted that only a lower price will bring the award in his direction.

Judging from the extent of lettings in recent weeks, owners and contractors in various sections of the country are awake to the fact that the present buyers' market has not had its equal in several months and that now is the opportune time for the erection of contemplated buildings. Improvement which started in March got well under way in April and is becoming more decisive in May. Prices on material fabricated, delivered and erected, now very low, may advance shortly.

Selling on Credit Abroad

INSTALMENT markets in the United States are approaching the saturation point, in the opinion of the executive manager of the National Association of Credit Men. In the future American manufacturers must look more to foreign buyers to absorb their increasing production. This was the view expressed at the annual convention of the National Foreign Trade council in Los Angeles recently.

The American people will continue to buy on instalments, but there is a limit to their capacity for doing so; if more goods are to be sold abroad manufacturers must be prepared to extend credit.

American manufacturers cannot duplicate on a large scale in foreign fields what they have done in American markets, with the instalment plan of selling, because many of the distributors with whom they deal lack the facilities for financing and extending credit to consumers. In many instances the buying power of the distributors and consumers is questionable.

Trade follows credit, and credit can only be established through avenues of communication. Every time communication is facilitated by the establishment of faster mail service, new commercial radio stations and airplane routes, the chances for American export trade is considerably enhanced. Even mail service is too slow in these days for the proper checking of credit arrangements. As the next step toward broadening the foundation for foreign trade more American capital may be required to extend telephones, telegraph, radio and airplane service in foreign countries.

Utilities Save Cast Pipe Market

INDICATIVE of the spotty characteristics of iron and steel marketing in the past few months is the cast iron pipe market, which meets active private contracting and industrial buying conditions but extremely dull municipal business. Distributors of water, gas and sewer pipe in the western and north central markets report private orders fully up to last year and actually ahead of some of the recent years. Sewer pipe shipments from Chicago plants to the trade have been increasing, and the outlook is the brightest in many months.

Public utility programs, inaugurated in part as the result of the Hoover business conferences early in the year, have had a more direct reflection than probably any other element. Western railroads likewise have been anticipating needs, and this too has resulted in part from the Washington conferences. The year's prospects for this branch of the industry, while disappointing from some angles, nevertheless hold more encouragement than in a number of other lines.

Secondary Railroad Buying Needed

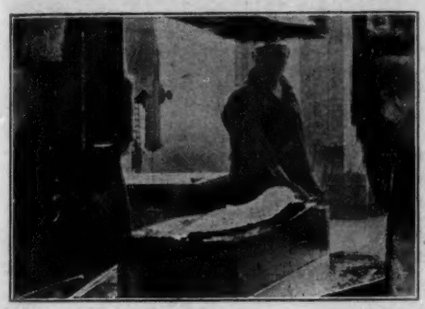
FREIGHT car builders, who have offered tangible support to the plate and light shape markets in the West for the past seven months, have reached or are approaching the final assembly and finishing touches for nearly 25,000 car units, contracted since late last year. Freight cars built in the West, where capacity is sufficient for 115,000 cars annually, supplied upward of 400,000 tons of finished steel and castings to Chicago territory in a buying movement that started out in unusually promising volume.

The fact that some recent car inquiries have been withdrawn for the present, and that immediately prospective rolling stock needs are unimportant considering potential capacity, make the outlook uncertain for the period after late July, when most of the recent orders will be completed. The extent to which railroad business has filled gaps in western steel activity and has helped keep operations ahead of other districts is made strikingly evident as the seasonal orders for the carriers are being closed out. The outlook for late season car buying and secondary track equipment purchases is being watched with absorbing interest.

IRON TRADE REVIEW

Volume 86, Number 23 — Published Every Thursday

E. L. SHANER, Editor. — *J. D. PEASE, Advertising Director.* — *F. F. LIGHT, Circulation Manager.*



Heavier Hammers Required in Forging Aluminum Alloys. Page 71.

Machine Tools Fact Service Increases

THE number of machine tool descriptions published in IRON TRADE REVIEW *so far this year is 42.5 per cent ahead of the number in the comparable period of 1929. With this issue the total to date is 171, against 120 last year. About 75 per cent of the descriptions are accompanied by illustrations. The method of grouping them, numbering them, and indexing them periodically is in line with the original purpose to supply busy executives and others in responsible positions the salient information necessary for them to know what a machine tool will do; if it will meet their requirements or offer some new advantage. Pertinent features of the machine tool market are discussed once a month, leading the descriptions of new machine tools and shop equipment for that issue.* *Turn to page 82.*

CONTENTS

For June 5, 1930

SPECIAL ARTICLES

Strong Alloys Promote Use of Aluminum Forgings..... 71
Intricate Conveyor System Has Centralized Controls—
By C. K. Pevear..... 75
Develops an Easily Machinable Corrosion-Resisting Steel..... 80
Tool Buying Needs Stabilization..... 82
Digest of New Machine Tools..... 83
Mirrors of Motordom..... 87
Editorials..... 89
Are You Buying and Selling Today for Your Future Success?—
By D. M. Strickland.....116

BUSINESS TREND

Trade Readjustments Still Being Made..... 92

Freight Car Loadings..... 93
Foundry Equipment Orders..... 93
Steel Scrap Prices..... 94
Soft Coal Production..... 94
Iron and Steel Foreign Trade.. 95
Iron and Steel Price Index..... 95

MARKET REPORTS

Review of Markets..... 96
Iron and Steel Prices.....96, 97, 98, 101, 111, 132

Pig Iron..... 99
Coke.....100
Ferroalloys.....100
Nuts, Bolts, Rivets.....100
Iron, Steel Scrap.....101
Semifinished.....102
Iron Ore.....102
Bars.....103
Plates.....103
Pipe.....104
Sheets.....105
Tin Plate.....105
Refractories.....105
Structural Shapes.....106
Reinforcing Bars.....107
Railroad Equipment.....108
Cold Finished.....109
Wire.....109
Strip Steel.....109
Nonferrous Metals.....110
Coke By-Products.....110
Warehouse Markets.....111
Pacific Coast Markets.....112
Foreign Markets.....125
Machinery Markets.....128

GENERAL NEWS

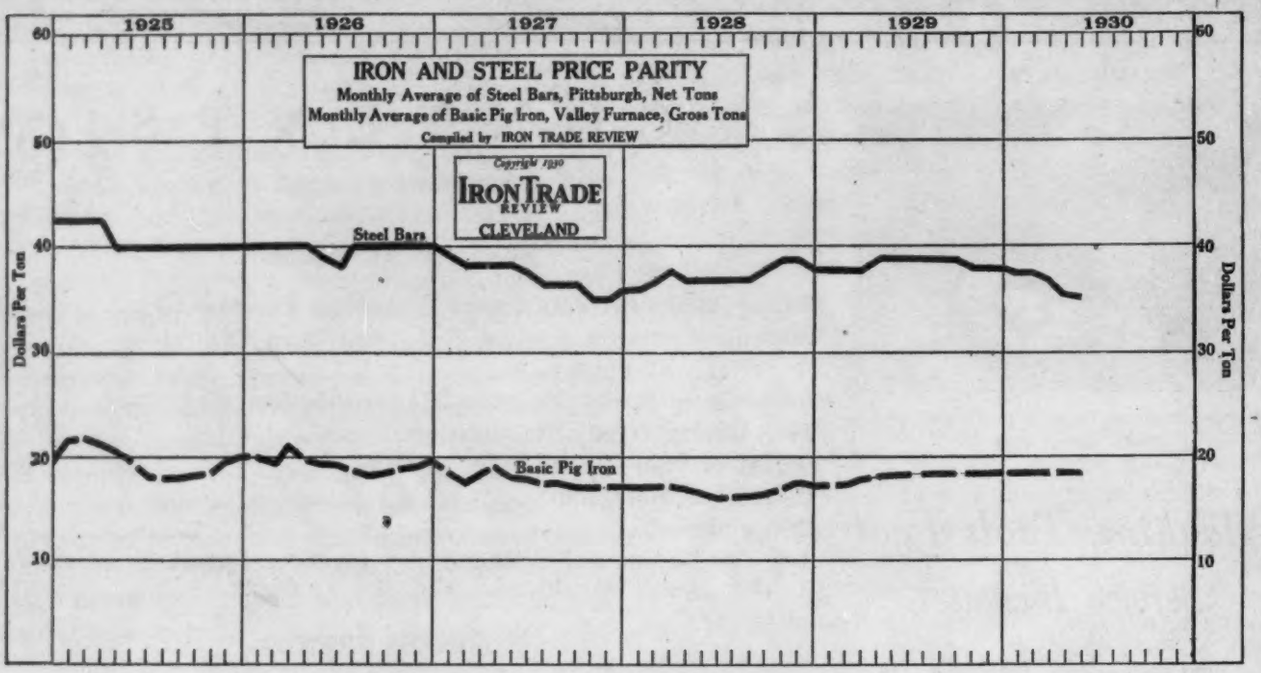
Pig Iron Rate Off Moderately in May.....114
Cleveland-Cliffs Extends Influence by Oglebay, Norton Affiliation.....115
Industrial Men in the Day's News—James Aston.....118

Men of the Industry.....119
Obituary.....121
Here and There in Industry.....123
Construction and Enterprise....127
New Incorporations.....130
Trade Publications.....131

IRON TRADE REVIEW is published by the Penton Publishing Co., Cleveland, O. Member, Audit Bureau of Circulation; Associated Business Papers Inc. and National Publishers Association. Branch offices: 1347 Peoples Gas Bldg., Chicago; 505 Bell Block, Cincinnati; 2203-2206 No. 220 Broadway, New York; 507-8 Oliver Bldg., Pittsburgh; 1703-11 Claus Spreckels Bldg., San Francisco; 1653 Pennsylvania avenue, Washington; and Boston. Foreign offices: Caxton House, Westminster S. W. 1, London; 9 Rue de Londres, Paris, France; Dahlmerstrasse 64A Berlin Lichterfeld-West, Germany; cable address: *PENTON*, Cleveland; *IROTRAPEN*, London. Terms: Subscription in United States, Cuba and Mexico, $6 per year; in Canada, $8.50 per year and in Great Britain and other countries £2:0:0 per year. *Entered at the Post Office at Cleveland as Second Class Matter.*

Copyright 1930 by the Penton Publishing Co.

The Business Trend



Trade Readjustment Still Being Made

VARIOUS critical appraisers of the business situation, overleaping the summer months, are becoming increasingly confident that early autumn should bring renewed signs of trade revival. Improvement, it is believed, should become more pronounced as the year draws to a close. During the summer, however, continued seasonal letdown in industrial activities is quite generally expected.

IN THE iron and steel industry seasonal slackening becomes more apparent with the price situation still unsettled. The price spread between basic pig iron and soft steel bars was narrowed still further last month, probably bringing an unstable relationship from which pig iron must either recede or steel bars advance. Basic pig iron quotations, unchanged at $18.50 a ton, valley furnace, are higher than at any time since April, 1927, while steel bar quotations are the lowest since October, 1927.

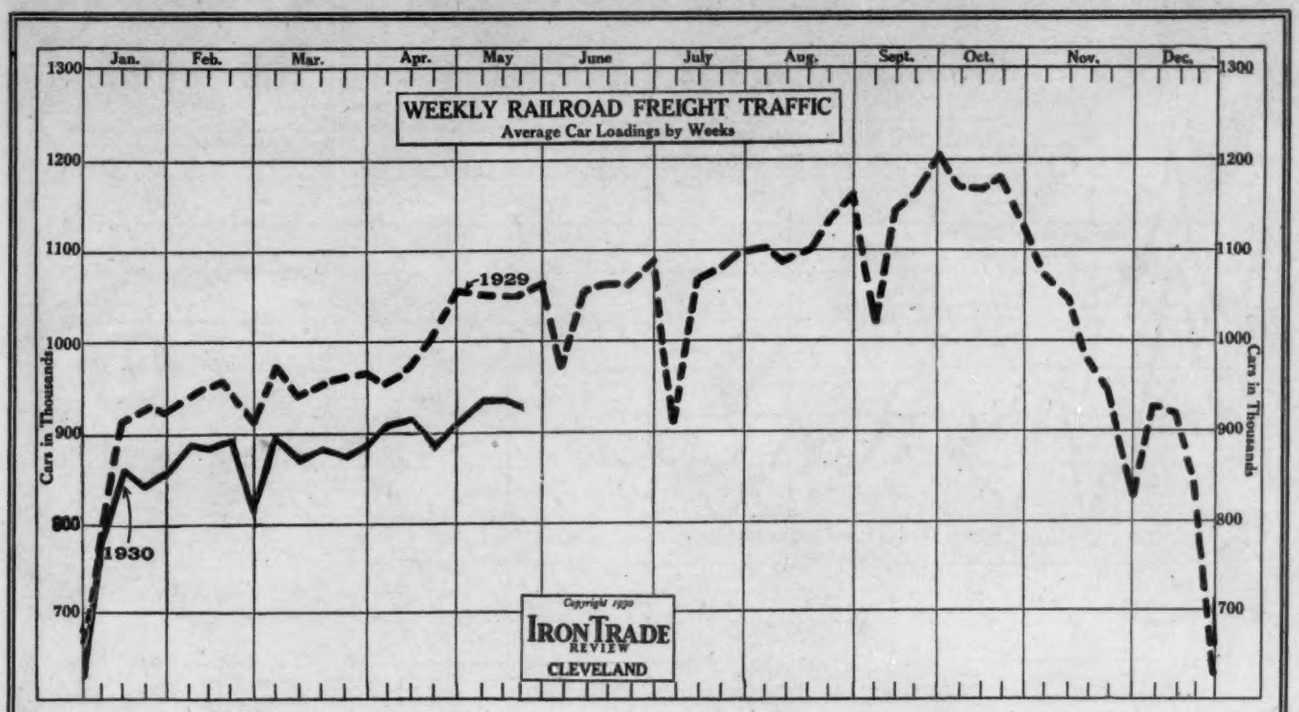
PRICES of soft steel bars, one of the most widely used finished steel products, have dropped $4 a ton, or more than 10 per cent, since last October. Quotations at Pittsburgh averaged $35.30 a ton in May against $36.00 in April and $39.00 in May, 1929. The current quotation is $35.00 a ton, Pittsburgh.

THE general level of wholesale prices continues downward although grains, copper and cotton have made some recent gains. Production and consumption probably are in closer balance than in several months, and further improvement soon may check the decline of commodity prices, stimulate large scale buying and increase production, thus restoring confidence.

WHILE an upturn in business thus seems likely, the rise from the present level of depression may require considerable time. Normal volume of business may not be reached before the middle of 1931 if previous recovery periods may be taken as a guide. On the other hand the conservative operating policies followed in recent months by most key industries with cheap and abundant credit should provide business with strong recuperative powers.

STATISTICS of industrial activities so far this year have compared badly with those of one year before because records for 1929 were unusually good. Just as these comparisons have needed interpretation, so will those of remaining months this year, for margins of decrease should be narrowed. As long as industrial statistics are unfavorable, business policies will continue cautious, building soundly for the future.

The Business Trend

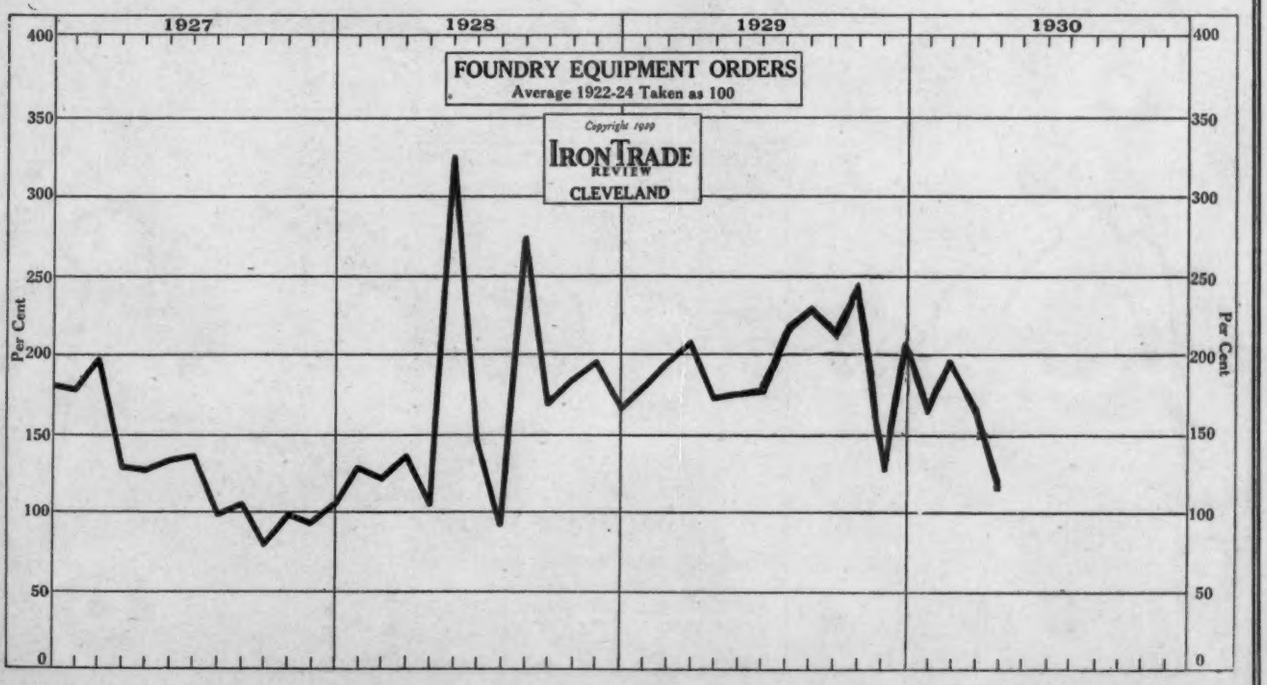


Freight Car Loadings

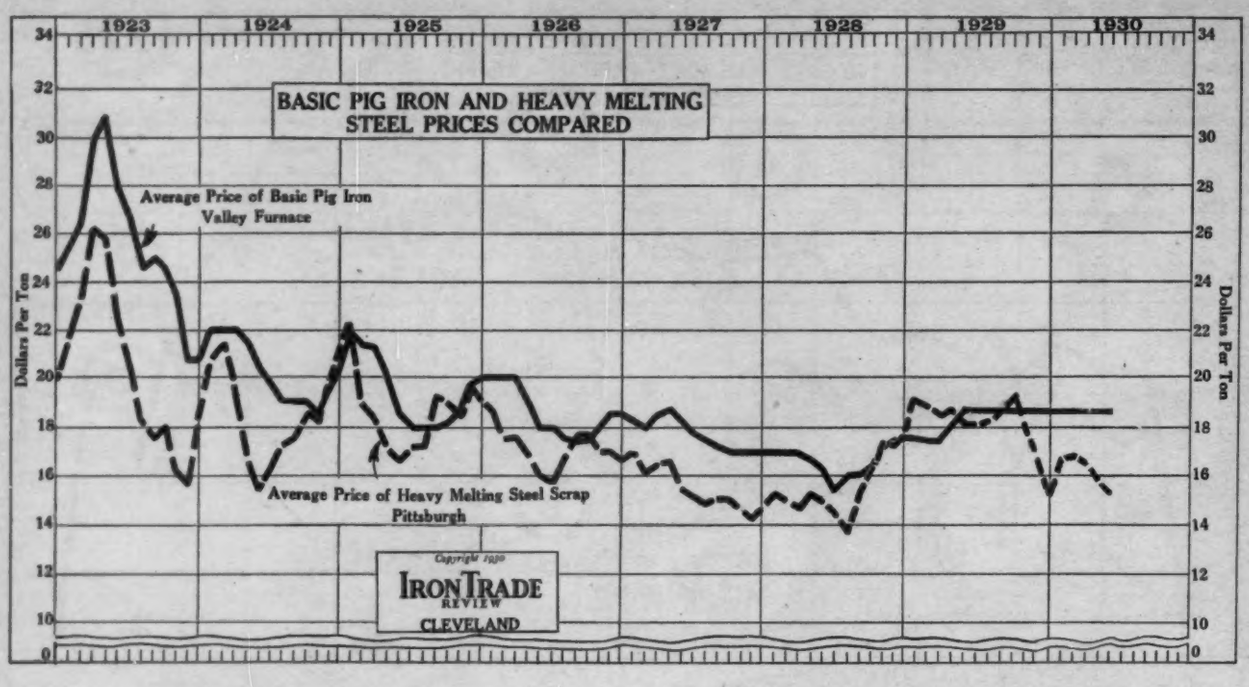
NO INDICATIONS of marked recovery in railroad freight traffic are appearing. The past two weeks have brought further declines, with car loadings for the week ended May 17 totaling 930,004, or nearly 13,000 below those for the week ended May 3 and 115,000 below the total for the corresponding week of May last year. Traffic in April showed generally wider losses from a year ago than in March. The reduced volume of freight is reflected in lower railroad earnings, despite many economies.

Foundry Equipment Orders

FOUNDRY equipment orders, as indicated by the monthly index compiled by the Foundry Equipment Manufacturers' association, dropped in April to the lowest level since last December. February business has proved the best for the year to date, with the index for that month rising to 196.4. In March there was a recession to 164.1. The April index dropped to 122.8 which compares with 172.6 for April, 1929. The April index of shipments rose to 274.8 against 194.5 for March while unfilled orders dropped sharply.



The Business Trend

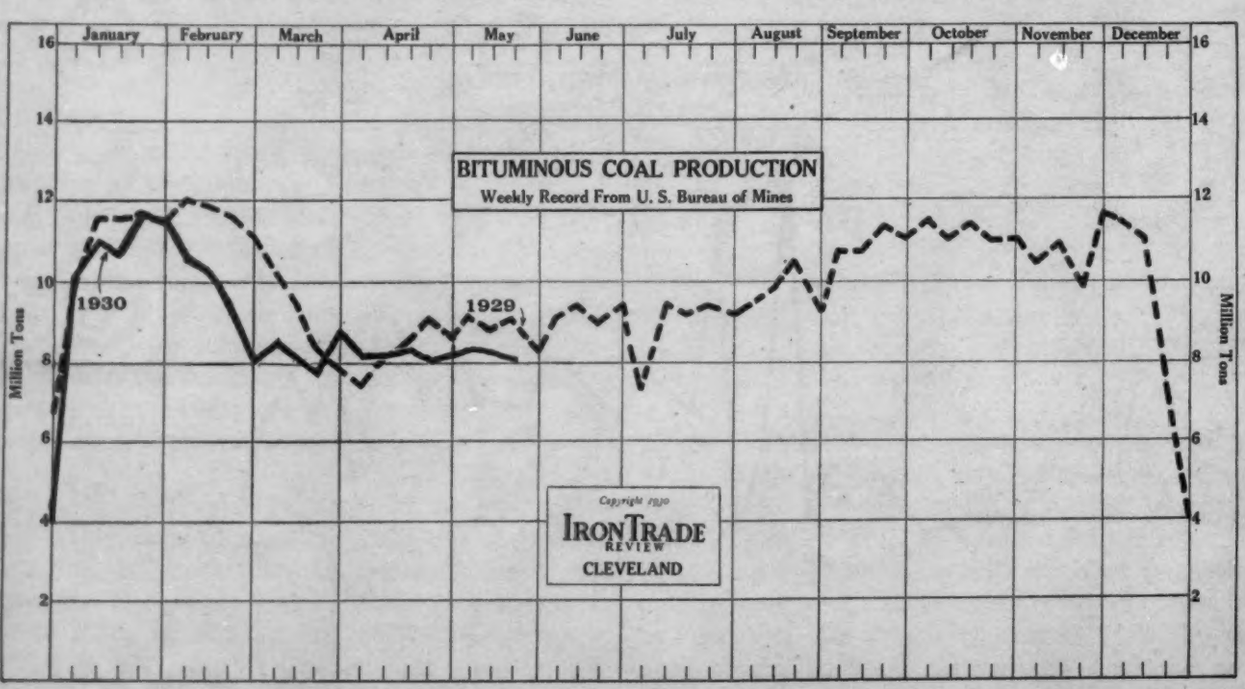


Steel Scrap Prices

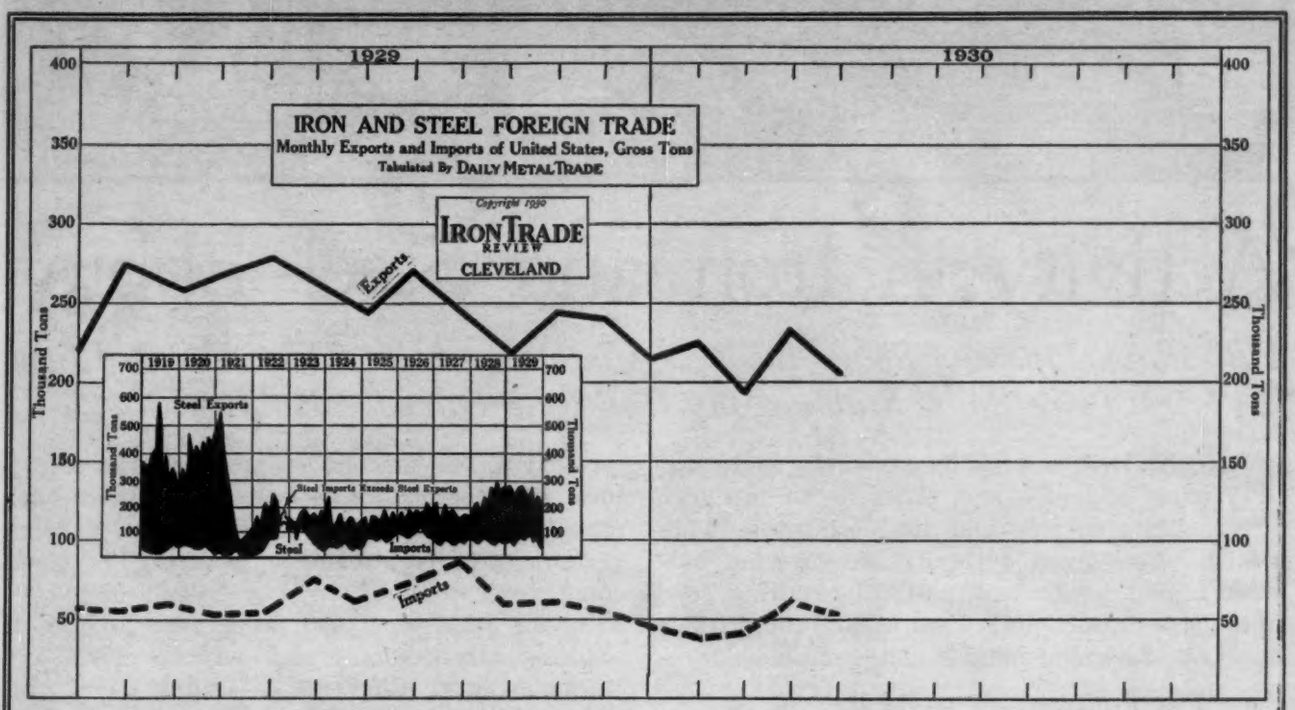
PRICES of iron and steel scrap in May fell almost to the low December level, making the third consecutive month during which scrap quotations have weakened. No. 1 heavy melting steel in May averaged $15.25 a ton at Pittsburgh compared with $15.97½ in April and $18 in May, 1929. Last December heavy melting scrap averaged $15 a ton, the lowest level in about 14 months. While scrap prices have been fluctuating basic pig iron quotations have held steadily for more than a year at $18.50 a ton, valley furnace.

Soft Coal Production

REDUCED industrial activity has caused a marked decline in sales of bituminous coal in recent months. Producers, as a consequence, have been forced to curtail operations so that output for the first four months of 1930 fell about 9.5 per cent below that for the corresponding period of 1929. For the week ended May 17 the bureau of mines estimates that output was 8,155,000 tons against 8,285,000 tons in the previous week and 9,058,000 tons in the corresponding week last year. Coal prices continue weak.



The Business Trend

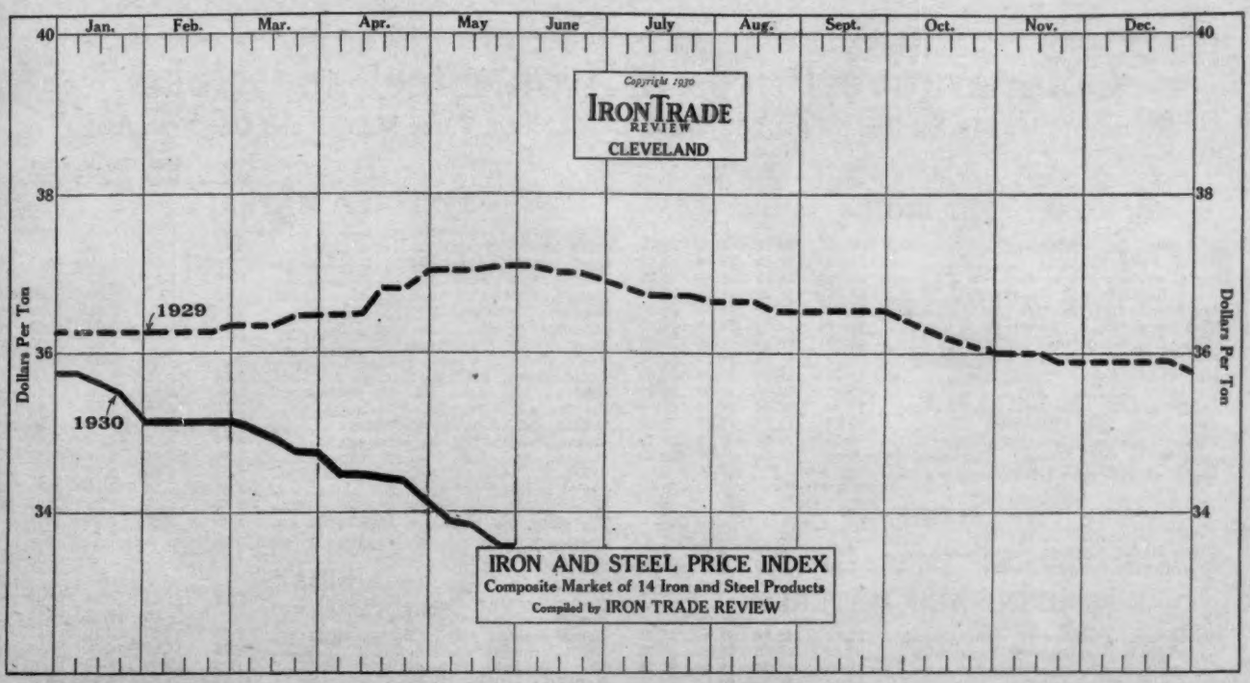


Iron and Steel Foreign Trade

FOREIGN trade of the United States in iron and steel products is showing marked contraction. Total exports and imports for the first four months of 1930 fell 18 per cent below those for the corresponding period of last year. April exports, amounting to 208,640 tons, were 12.5 per cent lower than the March total of 238,333 tons, comparing with 277,580 tons for April, 1929. April imports were 52,650 tons against 55,604 tons in March, a decline of 5.3 per cent, comparing with imports of 54,337 tons a year ago.

Iron and Steel Price Index

IRON and steel prices, as measured by IRON TRADE REVIEW'S weekly composite, held steady during the last week of May after having declined steadily for 12 consecutive weeks. For the week ended May 28 this index was $33.56. The May average was about 10 per cent below that of the corresponding month last year. The downward trend started one year ago, first mildly, but during January and again in March, April and May of this year, declines became sharp. The markets continue irregular.



Activity in Iron and Steel Ebbing

Fair Plate, Pipe and Shape Business Unable To Stem Tide—Finished Steel Prices More Stable—May Iron Rate Falls 1.8 Per Cent

EXCEPTING eastern Pennsylvania as to districts and pipe and plates as to products, activity in iron and steel continues to diminish. Consumers generally are covering only their urgent needs, new projects requiring steel in tonnage proportions are scarce, and the markets appear to be sinking into a dull summer.

Some Pipe Projects Slow to Mature

Pipe mill backlogs have been lengthened this week by 18,000 tons booked by the A. O. Smith Corp. for the Southern Natural Gas Corp. and 15,000 tons reported taken by the Youngstown Sheet & Tube Co. for the Phillips Petroleum Corp. At many mills heavier schedules are in effect. Pipe producers have figures out on many large projects, which are slow to close.

Plate mills have been quickened by heavy ship orders in the East, the 29,000 tons for the two United States Lines vessels being divided between Steel corporation subsidiaries and Bethlehem, and in the West by oil country bookings. Chicago mills entered 10,000 tons for Southwestern tanks and received a like amount of new inquiry. Structural steel fabricators booked only mediocre business this week, but many have moderate backlogs.

Automotive requirements, however, are slackening perceptibly. Ford has scheduled 180,000 units for June, or 10,000 fewer than in May, is reducing his inventory and may be closed two weeks in July. Chevrolet is scaling down from 110,000 units in May to 100,000 in June. Save for Buick and Chrysler, starting on new models, other automotive manufacturers also are curtailing. Middle West mills also are rapidly working off their car steel specifications and face a narrower market on implement and tractor requirements.

Steelmaking Rates Down This Week

The preponderance of depressing factors is evidenced by the recession in steelmaking operations this week to about 71½ per cent, compared with 73-74 last week. Steel corporation units are at 75 to 80 per cent, with independents at 68, both slightly decreased from last week. Chicago mills

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	June 4, 1930	May 1930	March 1930	June 1929
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	20.76
Basic, valley	18.50	18.50	18.50	18.50
Basic, eastern del. eastern Pa.	18.76	18.75	18.80	20.25
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.76
No. 2 foundry, Chicago	18.50	19.00	19.50	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.40
**No. 2X, Virginia Furnace	18.25	18.25	18.25	20.00
**No. 2X, Eastern del. Philadelphia	20.26	20.26	20.76	22.76
Malleable, valley	19.00	19.00	19.00	19.00
Malleable, Chicago	18.50	19.00	19.50	20.00
Lake Superior, charcoal, del. Chicago	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	19.13	19.13	19.13	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12.50 to $13.00, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.50	2.55	2.60	2.75
Connellsville foundry, ovens	3.50	3.50	3.50	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	32.00	32.20	33.00	35.75
Sheet bars, open-hearth, Pittsburgh	32.00	32.20	33.00	35.75
Billets, open-hearth, Pittsburgh	32.00	32.20	33.00	35.75
Wire rods, Pittsburgh	36.00	36.40	38.00	42.00

	June 4, 1930	May 1930	March 1930	June 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.75	1.75	1.85	1.95
Steel bars, Chicago	1.85	1.85	1.90	2.05
Steel bars, Philadelphia	2.04	2.04	2.12	2.27
Iron bars, Chicago	1.90	1.90	1.95	2.05
Shapes, Pittsburgh	1.70	1.75	1.80	1.95
Shapes, Philadelphia	1.76½	1.77	1.81	2.06
Shapes, Chicago	1.80	1.85	1.90	2.05
Tank plates, P'ttsburgh	1.70	1.75	1.85	1.95
Tank plates, Philadelphia	1.90½	1.91	2.00	2.15
Tank plates, Chicago	1.80	1.85	1.90	2.05
*Sheets, blue anl., No. 13, Pittsburgh	2.15	2.15	2.25	2.20
Sheets, gal., No. 24, Pittsburgh	2.55	2.55	2.65	2.95
Sheets, gal., No. 24, Pittsburgh	3.20	3.25	3.30	3.65
Sheets, black, No. 24, Chicago	2.70	2.70	2.80	3.10
*Sheets, blue anl., No. 13, Chicago	2.30	2.35	2.50	2.50
Sheets, galvanized, No. 24, Chicago	3.35	3.35	3.45	3.85
Plain wire, Pittsburgh	2.30	2.35	2.40	2.50
Wire nails, Pittsburgh	2.15	2.15	2.30	2.65
Tin plate, per base box, Pittsburgh	5.25	5.25	5.25	5.35

*Comparison for May, 1929, is with old blue annealed base, No. 10.

SCRAP				
Heavy melting steel, Pittsburgh	15.25	15.40	16.60	18.30
Heavy melting steel, eastern Pa.	13.25	13.38	14.95	16.25
Heavy melting steel, Chicago	12.25	12.55	13.20	14.95
No. 1 wrought, eastern Pa.	15.25	15.38	15.25	16.25
No. 1 wrought, Chicago	11.75	12.70	13.50	15.40
Rails for rolling, Chicago	14.75	14.90	15.00	17.50

Current Prices for Rolled Steel Products

STEEL PLATES

Pittsburgh, base	1.70c
Philadelphia, del.	1.90½c
New York, del.	1.98c to 2.03c
Boston, del.	2.10c to 2.15c
Chicago, base	1.80c
Cleveland, delivered	1.89c
Lackawanna, N. Y., base	1.80c
Birmingham, base	1.85c to 1.90c
Coatesville, Pa., base	1.80c
Pacific Coast, c.i.f.	2.25c
St. Louis, del.	2.12c
Detroit, del.	1.96½c to 2.01½c

STRUCTURAL SHAPES

Pittsburgh, base	1.70c
Philadelphia, del.	1.76½c to 1.91½c
New York, del.	1.90½c to 2.10½c
Boston, del.	2.03½c to 2.13½c
Chicago, base	1.80c
Cleveland, delivered	1.89c
Lackawanna, N. Y.	1.80c
Birmingham, base	1.85c to 1.90c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	1.96½c to 2.01½c

BARS

SOFT STEEL

Pittsburgh, base	1.75c
Chicago, base	1.85c
Birmingham, base	1.90c to 1.95c
Lackawanna, N. Y., base	1.85c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.80c
Cleveland, del., outside mills	1.82½c
Philadelphia, del.	2.04c to 2.09c
New York, delivered	2.08c
Boston, delivered	2.15c
Detroit, del.	2.00c
Pittsburgh, cold finishing	1.90c
Pittsburgh, forging quality	2.00c

RAIL STEEL

Chicago Heights	1.75c to 1.80c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	1.90c
New York, delivered	2.03c
Philadelphia, delivered	1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet cut lengths	2.00c to 2.05c
Stock lengths from mill	1.75c to 1.80c
Chicago, billet, 30 tons and over	2.00c
Under 30 tons	2.40c
Chicago, rail steel	1.70c to 1.75c
Road and bridge work	1.80c
Philadelphia, cut lengths	2.14c

CORROSION, HEAT RESISTANT ALLOYS

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets....35.00c; plates....31.00c; bars....28.00c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

SHEETS

SHEET MILL BLACK, No. 24

Pittsburgh, base	2.50c to 2.55c
Detroit, delivered	2.76½c to 2.81c
Philadelphia, delivered	2.84c
Gary, Indiana Harbor	2.65c
Chicago, delivered	2.70c
Birmingham, base	2.75c
St. Louis, del.	2.97c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.80c to 2.90c
Gary, base	2.90c to 3.00c

GALVANIZED NO. 24

Pittsburgh, base	3.20c
Philadelphia, delivered	3.44c
Gary, Indiana Harbor	3.30c
Chicago, delivered	3.35c
Birmingham, base	3.40c
St. Louis, del.	3.62c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base*	2.05c to 2.15c
Chicago, district mills	2.25c to 2.35c
Chicago, delivered	2.30c to 2.40c
St. Louis, delivered	2.57c
Philadelphia, delivered	2.44c
Birmingham	2.35c

*Minimum price is on continuous mill product.

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base*	1.80c to 2.00c
Chicago, district mills	2.10c to 2.20c
Chicago, delivered	2.15c to 2.25c
Philadelphia, delivered	2.29c
St. Louis, delivered	2.42c
Birmingham	2.20c

*Minimum price is on continuous mill product.

AUTOMOBILE NO. 20

Pittsburgh, base	3.70c
Detroit, delivered	3.91½c to 3.96½c

FURNITURE NO. 24

Pittsburgh	3.80c

(Turn to the following page)

have slipped almost to 80 per cent, Youngstown is at 65 per cent or down two points, Cleveland is off nine points to 70 per cent, while Pittsburgh is barely holding at 70. By contrast, the leading independent is slightly increasing its rate this week.

In this downward tendency pig iron production is now participating. After rising slowly but consecutively since December, the daily rate declined in May, when the average was 104,509 gross tons, compared with 106,371 tons in April and 125,753 tons last May. The rate of May, 1928, which was 106,219 tons, was practically duplicated last month. The May total of 3,239,772 tons brought the five-month total for 1930 to 15,368,401 tons, against 17,922,433 tons in 1929. Again compared with 1928, when 15,428,123 tons were made in the first five months, 1930 shows a parity. At the close of May 179 blast furnaces were blowing, a net decline of three from April 30.

Heavy Steel Prices Seem Stabilized

Interest in the third quarter has cropped out only in pig iron and strip, but little blame attaches to the price situation. In finished steel, prices are little discussed, and some believe present levels will survive any further decline in demand. Semi-finished steel at Pittsburgh, which declined two weeks ago from $33 to $31, has rebounded to $32. Steel scrap is slightly stronger at Pittsburgh on the strength of consumer buying. Pig iron, on the other hand, is generally weak. Southern producers are making still lower prices for northern business, and silvery iron is off $1. At Chicago, northern iron is now $18.50 to $19, virtually a decline of 50 cents. Warehouse prices on cold-finished steel have declined $1 to $8 per ton.

May Car Awards Lowest of Year

May freight car awards, at 1286, were the lowest of the year, bringing the five-month total to 31,076, comparing with 56,930 in the comparable period of 1929 and 25,912 in 1928. Canadian Pacific has ordered 150 cars and is inquiring for 20 locomotives. Thirty-four hundred freight cars are on inquiry. Norfolk & Western may buy 40,000 tons of rails.

Highway work continues to bring heavy business to concrete bar producers, Illinois alone this week buying 2000 tons. Structural inquiry is fair, but this week's awards totaled only 21,285 tons, compared with 37,880 tons last week and 59,660 tons a year ago. For 1930 to date structural awards have aggregated 794,389 tons; last year 976,789 tons.

Partly due to a late start, iron ore shipments on the Great Lakes to June 1, at 7,087,132 tons, were 41 per cent below the like period of 1929.

A reduction in pig iron at Chicago is more than washed out by a rebound in semifinished steel, giving the IRON TRADE REVIEW composite its first advance since December. This index is up 8 cents, to $33.64.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (June 4, 1930)	$33.64
Last week (May 28, 1930)	33.56
One month ago (May, 1930)	34.23
Three months ago (March, 1930)	34.95
One year ago (June, 1929)	36.96
Ten years ago (June, 1920)	67.89
Fifteen years ago (June, 1915)	23.74

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted on Last Editorial Page—See Preceding Page for Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	1.80c
Delivered, Detroit	2.01½c
Hot strip 6¼ to 24-in., Pitts.	1.70c
Delivered Detroit	1.91½c
Hot strip, bands 6 in. and under, Chicago	1.90c
Do. 6¼ to 24	1.80c
Cooperage stocks, Pittsburgh	2.00c to 2.10c
Do. Chicago	2.10c to 2.20c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 tons and over)	2.45c to 2.55c
Delivered, Detroit	2.65c to 2.75c
Worcester, Mass., (3 tons and over)	2.60c to 2.70c

ALLOY STEEL

Hot Rolled—F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differentials	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 125-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanad'm	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds, squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same prices per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Bars, drawn or rolled, Pitts., Chicago and Buffalo	2.10c
Do Cleveland	2.00c to 2.10c
Do, delivered, Detroit	2.20c
Shafting (turned, polished) Pittsburgh, Buffalo	2.10c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)
(To Jobbers—Merchant Trade)

Standard wire nails	$2.15 and 2.25
Cement coated nails	2.15 and 2.25
Galvanized nails	4.15 and 4.25

(Per pound)

Polished staples	2.60c and 2.70c
Galvanized staples	2.85c and 2.95c
Barbed wire, galvanized	2.80c and 2.90c
Annealed fence wire	2.30c and 2.40c
Galvanized wire	2.75c and 2.85c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Bright plain wire, 6 to 9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalk and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland base on products made there. Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails, c.l., f.o.b. mills	2.45c to 2.55c
Cut nails, l.c.l., f.o.b. mills	2.55c to 2.65c
Sheet piling, base, Pittsburgh	2.00c to 2.10c

Chain proof BB and BBB, Pitts.

3/16-in. to ½-in.	33 1/3 and 5 off
9/16-in. to 1½-in.	33 1/3 off

CAST IRON WATED PIPE

Class B Pipe—Per Net Ton

Six-inch and over, Birmingh'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	47.20 to 49.20
Six-inch to 24-inch, Chicago	43.20 to 45.20
Six-inch and over, New York	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	3.75c to 3.90c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts., dist.	$6.50 to 6.75 off
Wrought, l.c.l., Chicago dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago	$6.70 to 6.80 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$25.00 to 29.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, mills	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lists, apply to lists of May 10, 1930.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off
Rolled thread ¾ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread ..... 73 off
Rolled thread ¾ x 6 and smaller take 10 per cent lower list.
Lag screws ..... 73 off
Plow bolts, Nos. 1-2-3-7 heads ..... 73 off
Tap bolts ..... 73 off
Blank bolts ..... 73 off
Stud bolts without nuts ..... 73 off
Stove bolts, 80, 10, 10 and 5 off in pkgs.; 80, 10, 10, 5 and 2½ off in bulk.
Tire bolts ..... 60, 10 and 10 off

NUTS

Semifinished ..... 73 off

***HEXAGON CAP SCREWS**

Milled ..... 80-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

***SQUARE HEAD SET SCREWS**

Milled ..... 80-5 off
Upset 1 in. diam. and smaller ..... 80-10-5 off

*Discounts dated Jan. 23, 1930.

RIVETS

Struc. c.l., Pitts.-Cleve.	2.90c
Structural, c.l., Chicago	3.00c

**7/16-inch and smaller, Pitts. ..... 70, 10 and 5 off
Chi., Cleve. ..... 70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED STEEL

Prices Per Gross Ton
BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$32.00
Pittsburgh, bessemer	32.00
Youngstown	32.00
Cleveland	32.00
Philadelphia	38.30
Chicago	33.00 to 34.00
Forging, Chicago	39.00
Forging, Pittsburgh	37.00
Forging, Philadelphia	43.30

SHEET BARS

Pittsburgh	$32.00
Youngstown	32.00
Cleveland	32.00
Chicago	33.00 to 34.00

SLABS

Pittsburgh	$32.00
Youngstown	32.00
Cleveland	32.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.70c to 1.75c

IRON ORE

LAKE SUPERIOR ORE
Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63% (contract)	10.00
Copper-free low phos. 58-65%	nominal

FOREIGN ORE
Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55%, iron, 6-10% manganese	11.00 to 11.50
North African low phosphorus	11.00
Swedish basic, 65%	9.50 to 10.50
Swedish low phosphorus	11.00
Spanish and North African basic, 50 to 60%	10.00
Newfoundland foundry, 55%	9.00
Tungsten, spot and future, short ton unit, duty paid	14.00
Chrome ore, 48%, net ton c.i.f.	$22.50

MANGANESE ORE

Prices, not including duty, are cents per unit; cargo lots.

Caucasian (52-55 per cent)	30 cents
Indian (48-50 per cent)	30 cents
Brazilian (46-48 per cent)	28 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide., gross ton	$19.50 to 20.50

REFRACTORIES

FIRE CLAY BRICK
Per 1000 f.o.b. works
First Quality

Pennsylvania	$43.00
Ohio	43.00
Illinois	43.00
Kentucky	43.00
Missouri	43.00
Maryland	43.00
Georgia and Alabama	40.00 to 47.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Mary'and	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK
Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE
Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	$40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK
Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	$45.00

Pig Iron

Third Quarter Requirements Receiving More Attention—Market Is 50 Cents Lower in Chicago District—Silveries Down $1

SOME interest in the pig iron market has been revived by the approach of third quarter, though business continues considerably below normal for this season. Northern furnaces are booking more 1000-ton orders, and the aggregate for the week reported at Cleveland, 23,000 tons, was nearly double that of the week preceding. Lake furnace shipments were slightly larger in May than in April, on a daily average basis. Some melters in the Chicago district underestimated second quarter requirements and are buying in the spot market. Delivered prices on southern iron have been reduced 50 cents at Chicago to $18.51, and the Chicago furnace price is down 50 cents. Silvery iron has been cut $1. Valley prices are holding, there being no incentive for revision.

PITTSBURGH, June 3.—Demand for pig iron remains slow, new business holding at the dull rate noted in the past several weeks. Shipments in May by most producers were lower than those in April, while new business declined slightly. Current buying consists entirely of small individual lots, leaving little activity in open market inquiry. This situation is a factor in the retention of recent prices, tonnage being insufficient to induce producers to lower their quotations. The general price tone is easy, with occasional shading reported, but the market usually is $18.50, valley, for No. 2 foundry and basic, and $19 for bessemer and malleable. The Davison Coke & Iron Co. is to shut down its Cherry Valley stack at Leetonia, O., Friday.

Boston, June 3.—Sharper competition is noted between eastern blast furnaces. Buffalo furnaces are reported offering No. 2X iron as low as $16 for shipment into this district. Sales in the past week by various furnace interests totaled about 2000 tons. Inquiries are light.

New York, June 3.—Pig iron demand shows little life, probably not more than 6000 tons having been placed in the past week. Two inquiries pending represent 3500 tons for third quarter. Prices are unchanged at $16 to $16.50, furnace, on Buffalo iron, and $18 to $18.50, New York docks, on southern iron. Recent orders include 1500 tons for Central Foundry Co.'s plant at Dundalk, Md. The navy is in the market for 150 tons for its yards at Brooklyn, Philadelphia and Portsmouth, N. H. Foundry operations in the New York metropolitan district average 50 to 60 per cent.

Buffalo, June 3.—Some furnace interests have announced $16.50 as their third quarter base on No. 2 plain foundry for shipment to outside territory. Others are said to be ready to quote 50 cents lower. Sales and inquiry this week are near the vanishing point.

Philadelphia, June 3.—Aside from a round tonnage placed by the Central Foundry Co. for its Dundalk, Md., plant, pig iron business is quiet. Prices generally are unchanged. Thirteen thousand tons of Virginia pipe iron has been sold recently to pipe plants in that state. Virginia foundry iron continues $17.75, base, furnace.

Youngstown, O., June 3.—More merchant pig iron is available for sale in the valleys now than in several months and the scaling down of ingot mold foundry operations will not aid the pig iron situation. Shipments from merchant furnaces continue fairly satisfactory and are likely to remain so at least during June. Competition from furnaces in adjoining districts at northern Ohio consuming points is growing keener. No. 2 foundry and basic are held at $18.50, valley, and bessemer and malleable at $19.

Cleveland, June 3.—Substantial improvement in pig iron sales is noted with the closer approach of the third quarter, though there is no indication of a brisk buying movement. Furnace interests with headquarters here and in Detroit booked collectively 23,000 tons in the past week, compared with 13,500 in the week preceding. A large portion of current orders is for third quarter. Individual sales are larger than recently, but some of the largest consumers are not yet in the market. Second quarter contracts are being worked out, and due mainly to the fact there was not much extended buying there will be little carryover to the next period. Shipments in May on a daily average basis were slightly ahead of those of April; as much as 10 per cent for one interest. A southern Ohio melter is in the market for 1000 tons of foundry iron, and a northern Indiana consumer is inquiring for 1000 tons of malleable, for third quarter. Prices are steady, and current figures are applying on third quarter contracts. Cleveland furnaces hold to $18.50, base, for local delivery, while less than $18 is being quoted in some instances in outside competitive points. Lake furnaces quote $18 to $19 in northern Indiana and lower Michigan.

Detroit, June 3.—Pig iron releases for June shipment show a moderate reduction from May. Neither producers nor consumers have appreciable stocks. Some iron is moving by water to Michigan ports. Occasionally southern iron is a competitive factor. Malleable and No. 2 foundry iron are $19.50, delivered Detroit, and for outside shipments are usually $19, base, Detroit furnace.

Cincinnati, June 3.—Sales of pig iron during the past week aggregated 2150 tons, the smallest volume in recent months, due partially to holiday in-

(*Concluded on Page* 113)

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts. dist. fur.	19.00
*Basic, del. Pitts.	19.63 to 20.13
Basic, del., eastern Pa.	18.50 to 19.00
Basic, Buff. fur. for local del.	18.00
Malleable, valley furnace	19.00
Malleable, Pitts. dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	18.50
Malleable, Chicago furnace	18.50 to 19.00
Malleable, Buff. fur. for local del.	19.00
Malleable, del. eastern Pa.	19.76 to 21.41
Malleable, Granite City fur.	19.00
No. 1 foundry, Chicago furnace	19.00 to 19.50
No. 1X, Eastern del. Phila.	20.76 to 21.26
No. 1X, Buff., fur. for local del.	20.00
No. 2 foundry, valley furnace	18.50
No. 2 fdy., Pitts. dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain, Buff. fur. for local del.	18.50
No. 2 foundry, Chicago furnace	18.50 to 19.00
No. 2 fdy., Cleve. fur. for local del.	18.50
No. 2 fdy., Granite City	19.00
No. 2 plain, del. Phila.	19.76 to 20.26
No. 2 plain, Virginia furnace	17.75
No. 2 plain, Buffalo, del. Boston	21.41 to 21.91
No. 2, Brooklyn, Buffalo all rail.	20.91 to 21.41
No. 2, Newark, Buffalo, all rail.	19.28 to 19.78
No. 2 Ala., Bir. base, local del.	14.00
No. 2 Tenn., Bir. base, local del.	14.00
No. 2 Tenn., del. Cincinnati	16.69 to 18.19
No. 2 Alabama, del. Cincinnati	16.69 to 18.19
No. 2, Alabama, del. Cleveland	19.01 to 19.51
No. 2 Alabama, del. Chicago	18.51
No. 2 Alabama, del., St. Louis	17.42
No. 2 Ala., Phila., dock dely.	17.25 to 18.25
No. 2 Ala., Balt., dock dely.	17.00 to 18.00
No. 2 Ala., N. Y., dock dely.	18.00 to 18.50
No. 2 Ala., Boston, dock dely.	20.21
No. 2X, Brooklyn, Buffalo all rail.	21.41 to 21.91
No. 2X, Newark, Buffalo all rail.	19.78 to 20.28
No. 2X, eastern, del. Phila.	20.26 to 20.76
No. 2X, Buffalo, fur. for loc. del.	19.00
No. 2X, Buffalo, del. Boston	21.91 to 22.41
No. 2X, Virginia furnace	18.25
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Superior, del., Chicago	23.04 to 27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63.00c, 76.00c and $1.13 per ton.

Silvery iron, Jackson county, O., furnace in per cents: 5—$22; 6—$22; 7—$22.50; 8—$23; 9—$24; 10—$25; 11—$27; 12—$28; 13—$32.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50; 17—$46.50.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$22.60
No. 1 foundry, del. Montreal	24.00
No. 2 foundry, del. Toronto	22.10
No. 2 foundry, del. Montreal	23.50
Malleable, del. Toronto	22.60
Malleable, del. Montreal	24.00
Basic, del. Montreal	22.50

Coke

Heating Fuel Lower—Furnace and Foundry Grades Unchanged —Orders Generally Are Small

LOWER prices are reported on beehive heating coke, $2 and less, with the approach of summer, while the standard furnace grade is freely offered at $2.50. The markets for furnace and foundry fuels continue quiet. Books for second half have been opened in some districts by makers of by-product coke at unchanged prices. Little improvement is noted in Connellsville production.

Pittsburgh, June 3.—Little change is noted in the dull condition prevailing for a number of weeks in all grades of beehive coke. Demand for furnace fuel is confined to occasional small tonnages but more sellers are sharing in this business since the price was reduced to $2.50. This quotation is steady. A price of $2 and less is heard on heating coke, but this grade is in a dull season. New business in foundry coke continues quiet, with prices unchanged.

Production of coke in the Connellsville region for the week ended May 24 was 29,250 tons, compared with 28,700 tons the preceding week and 104,880 tons in the same period a year ago, according to the *Connellsville Courier*.

Boston, June 3.—Cool weather has sustained demand for domestic coke, while foundries continue to buy on a hand-to-mouth basis. Producers have opened their books for last half.

Cincinnati, June 3.—Shipments of by-product foundry coke during May were reported slightly under the total for April. New buying continues dull. Prices are unchanged at $10.05, delivered, Cincinnati.

New York, June 3.—Coke demand continues below normal, with prices easy but unchanged. Beehive furnace coke is $2.50 to $2.65, Connellsville, and beehive foundry coke, $3.50 to $3.75, Connellsville, and $4.85, Latrobe. By-product coke is $9.40, delivered Newark; $11, New England; and $9, Philadelphia.

St. Louis, June 3.—Shipments of metallurgical coke in this district during May were at a lower daily average than in April, and the lowest for any May in the past five years. New orders are restricted to immediate requirements. Prices are unchanged.

Birmingham, Ala., June 3.—Independent coke producers are accumulating stocks in anticipation of an increase in demand in the fall. Current consumption in this district is good, and a little tonnage is being shipped to other consuming centers. Prices are steady.

Coke Prices

Prices Per Net Ton

Beehive Ovens	
Connellsville furnace	$2.50
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit ovens	8.50
Philadelphia, del.	9.00

Ferroalloys

Shipments Reflect Lower Trend in Steelworks' Requirements

New York, June 3.—Spot demand for spiegeleisen is quiet, with shipments on contracts slightly less active than a month ago. Prices are unchanged, with domestic spiegeleisen, 19 to 21 per cent, $34, furnace, in carload lots. Ferromanganese is $99, duty paid, to users of carloads to 500 tons annually.

Business in special ferroalloys is spotty. Prices are unchanged. Chrome ore is easy on account of abundant supplies. Tungsten ore is in a dull market.

Pittsburgh, June 3.—Shipments of ferromanganese and spiegeleisen are expected to decline this month in keeping with lighter operations in the iron and steel industry. Spot buying continues quiet, such orders being less numerous than formerly, although prices are steady at $103.79, delivered, for ferromanganese and $33 for spiegeleisen, both quotations applying on small lots. Other alloys are unchanged, the last revision having been a $6 reduction in 14 to 16 per cent electrolytic ferrosilicon which currently is quoted $39. Ferrotungsten continues dull at about $1.30.

Bolts, Nuts, Rivets

Smaller Demand Appears at Lower Price Range

NUT AND BOLT PRICES, PAGE 98

Pittsburgh, June 3.—Demand for bolts, nuts and rivets is lagging, with May tonnage falling slightly below that of April. Buying is in small lots, with recent price changes lending some uncertainty to new buying although current quotations are steady at 73 off for bolts and nuts and 2.90c for large rivets. Small rivets continue 70, 10 and 5 off.

New York, June 3.—Thirteen hundred tons of 1⅜ by 6-inch bolts for the Rutgers street municipal tunnel have been awarded through Mason & Hanger, contractors, to the Oliver Iron & Steel Corp. With jobbers showing little interest and with railroad buying at a virtual standstill, general demand for bolts and nuts is listless. Eastern producers continue to operate around 60 per cent, with prices showing little change.

Chicago, June 3.—Third quarter contracting in bolts, nuts and rivets probably will be under way shortly at present quotations of 73 off for bolts and nuts, and 3.00c, Chicago, for large structural rivets in carload lots. Lighter buying by implement and tractor makers is leaving a marked gap in total specifications.

J. C. Chaffe Resigns

John C. Chaffe has resigned as division manager at Philadelphia for A. M. Byers Co., to become assistant to the president of Wrought Iron Co. of America. His headquarters will be in the Commercial Trust building, Philadelphia.

Elects Vice President

Harbour Mitchell, director and assistant to the president of E. J. Lavino & Co., Philadelphia, since June, 1929, has been elected vice president. Prior to that date he had been resident manager at Pittsburgh for five years.

Hoist Builders To Meet

New York, June 3.—The Electric Hoist Manufacturers' association will meet at the Hotel Statler, Buffalo, July 11.

Ferroalloy Prices

(In dollars, except Ferrochrome)

*Ferromanganese, 78 to 82 per cent tidewater, duty paid	$99.00
*Ferromanganese del. Pittsburgh	103.79
Spiegeleisen, 19 to 21 per cent, domestic furnace spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.30 to 1.35
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do, one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Scrap

Downward Tendency Not Checked and Prices Sag—Melters Slow to Cover Tonnages

BOTTOM has not been reached in iron and steel scrap prices and further declines are noted almost daily. Some industrial producers are holding material for better prices but railroad tonnages are sufficient to meet all needs and this withdrawal of tonnage is not effective. Buying is at minimum.

Chicago, June 3.—Some views of the iron and steel scrap market are that the downward trend is likely to continue for about 30 days. Sellers are expecting a dull July. Several round tonnages of heavy melting steel have been sold at $12.75, Chicago switching district, setting a range of $12.25 to $12.75. Dealers are able to buy at $12.25. Small-lot buying features most grades. Virtually no market exists for cupola material. Dealers seeking to close sales face stiff pressure from melters against prices. With inventories extremely low melters soon may show more interest in the future and take advantage of present low prices. A number of industrial producers continue to hold for higher prices, but railroad offerings are substantial and a moderately heavy supply exists for all needs. Cast grades are down 25 to 50 cents. With no active buying of hydraulic compressed sheets, the market is down 25 to 50 cents.

Buffalo, June 3.—Bethlehem Steel Co. is reported to have bought 5000 tons of melting steel for delivery at Lackawanna. The price paid was $13.25 for No. 1 and $11.75 for No. 2

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 12.00
Boston, dealers	8.10 to 8.75
Buffalo, No. 1	13.25 to 14.00
Buffalo, No. 2	11.50 to 11.75
Chicago	12.25 to 12.75
Cincinnati, deal.	11.00 to 11.50
Cleveland, No. 1	12.25 to 13.00
Cleveland, No. 2	11.75 to 12.25
Detroit, No. 1 deal	11.00 to 11.50
Detroit, No. 2 deal.	9.50 to 10.00
East Pa., del. mill	13.00 to 13.50
N. Y. deal R. R.	9.00 to 9.50
N. Y. deal No. 2	7.00 to 7.50
N. Y., deal. yd.	6.25 to 6.75
Pittsburgh No. 1	15.00 to 15.50
St. Louis, No. 1 sel.	11.75 to 12.00
Federal, Ill.	11.00 to 11.50
Granite City, Ill.	10.50 to 11.00
Valleys, No. 1	15.50 to 16.00

COMPRESSED SHEETS

Buffalo (dealers)	11.50 to 11.75
Chicago	10.75 to 11.25
Cleveland	12.00 to 12.50
Detroit, dealers	10.50 to 11.00
E. Pa. new mat.	12.00 to 12.50
Pittsburgh	14.50 to 15.00
Valleys	15.00

BUNDLED SHEETS

Buffalo	9.00 to 9.50
Cincinnati, deal.	10.25 to 10.75
Cleveland	9.50 to 10.00
Eastern Pa.	10.00
Pittsburgh	12.50 to 13.00
St. Louis	6.50 to 7.00

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.00 to 8.50
Detroit, dealers	8.25 to 8.75
St. Louis	6.50 to 7.00

STEEL RAILS SHORT

Birmingham	11.00 to 12.00
Boston, dealers	7.00 to 8.75
Buffalo	17.00 to 17.50
Chicago (3 ft.)	14.25 to 14.75
Chicago (2 ft.)	15.00 to 15.50
Cincinnati, deal.	17.00 to 17.50
Detroit, dealers	15.50 to 16.00
Pittsburgh, (open-hearth, 3 ft. and less)	17.50 to 18.00
St. Louis	16.00 to 16.50

STOVE PLATE

Birmingham	10.00 to 11.00
Boston, consumers	10.00 to 10.50
Buffalo	11.00 to 11.50
Chicago, net	9.50 to 10.00
Cinn., deal. net	8.25 to 8.75
Detroit, net, deal.	9.00 to 9.50
Eastern Pa.	10.50
N. Y., deal., mill	6.25 to 6.50
St. Louis	9.75 to 10.25

COUPLERS, SPRINGS

Buffalo	17.00 to 17.50
Chicago	14.00 to 14.50
Eastern Pa.	18.50
Pittsburgh	18.50 to 19.00
St. Louis	12.50 to 13.00

ANGLE BARS—STEEL

Chicago	13.00 to 13.50
St. Louis	11.25 to 11.75

LOW PHOSPHORUS

Buffalo, billets and bloom crops	17.50 to 18.00
Cleve. billet and bloom crops	17.50
Eastern Pa.	19.50 to 20.00
Pitts. billet and bloom crops	20.00 to 21.00
Pitts. Sheet bar crops	19.00 to 19.50

FROGS, SWITCHES, GUARDS

Chicago	13.25 to 13.75
St. Louis	12.00 to 12.50

SHOVELING STEEL

Chicago	12.25 to 12.75
Cleveland	9.75 to 10.25
St. Louis	10.50 to 11.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 10.50
Boston, dealers	9.50 to 10.00
Buffalo, No. 1	10.00 to 10.50
Buffalo, No. 2	13.75 to 14.25
Chicago,, No. 1	11.75 to 12.35
Chicago, No. 2	12.25 to 12.75
Cincinnati, No. 2	11.00 to 11.50
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	11.75 to 12.00
Pittsburgh, No. 2	15.00 to 15.50
St. Louis, No. 1	10.00 to 10.50
St. Louis, No. 2	11.00 to 11.50

SPECIFICATION PIPE

Boston	8.00 to 8.50
Eastern Pa.	12.50
New York, deal.	8.75

BUSHELING

Buffalo, No. 1	11.50 to 13.00
Chicago, No. 1	10.50 to 11.00
Cinn., No. 1 deal.	9.25 to 9.75
Cinn., No. 2	6.25 to 6.75
Cleveland, No. 2	8.75 to 9.00
Detroit, No. 1 new deal.	10.00 to 10.50
St. Louis, No. 1	9.50 to 10.00
Valleys, new No. 1	15.00

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston, dealers	4.10 to 4.60
Buffalo	8.75 to 9.25
Chicago	7.00 to 7.50
Cincinnati, deal.	7.50 to 8.00
Cleveland	8.50 to 9.00
Detroit	6.50 to 7.00
Eastern Pa.	9.50
New York, deal.	6.00
Pittsburgh	9.50 to 10.00
St. Louis	6.75 to 7.25
Valleys	11.25 to 11.75

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	4.00 to 4.50
Buffalo	9.75 to 10.25
Cincinnati, deal.	8.00 to 8.50
Cleveland	9.50 to 9.75
Detroit, dealers	7.75 to 8.00
Eastern Pa.	8.50 to 9.00
New York, deal.	5.00
Pittsburgh	10.00 to 10.50

CAST IRON BORINGS

Birmingham, chem.	12.00 to 13.00
Birmingham, plain	7.00 to 8.00
Boston, chem.	9.00 to 9.25
Boston, dealers	4.10 to 4.60
Buffalo	9.75 to 10.25
Chicago	8.00 to 8.50
Cincinnati, deal.	8.00 to 8.50
Cleveland	9.50 to 9.75
Detroit, dealers	7.75 to 8.00
Eastern Pa.	10.00
Eastern Pa, chem.	14.00
New York, deal.	6.50
Pittsburgh	10.00 to 10.50
St. Louis	9.25 to 9.50

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	10.00 to 10.50
Chicago, net	8.50 to 9.00
Cincinnati	9.00 to 9.50
Eastern Pa.	11.00
New York, deal.	7.75
St. Louis	10.25 to 10.50

FORGE FLASHINGS

Boston, dealers	7.00 to 7.50
Buffalo	11.50 to 12.00
Cleve. over 10 in.	10.50 to 11.00
Detroit	9.75 to 10.25

FORGE SCRAP

Boston, dealers	7.00 to 7.50
Chicago	15.00 to 15.50
Eastern Pa.	12.50 to 13.00

ARCH BARS AND TRANSOMS

Chicago, net	15.00 to 15.50
St. Louis	15.00 to 15.50

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	12.00 to 12.50
Chicago steelworks	9.50 to 10.00
Cleveland	12.00 to 12.25
Eastern Pa.	12.00
Pittsburgh	13.00 to 13.50
St. Louis	9.25 to 9.75

STEEL CAR AXLES

Birmingham	14.00 to 15.00
Boston, ship point	15.50 to 16.00
Buffalo	16.00 to 16.50
Chicago	17.00 to 17.65
Eastern Pa.	22.00
St. Louis	16.50 to 17.00

SHAFTING

Boston, ship point	12.50 to 13.00
Chicago	16.25 to 16.80
Eastern Pa.	18.00 to 18.25
New York, deal.	13.50 to 14.50
St. Louis	17.00 to 17.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	17.00 to 17.50
Chicago, iron	13.50 to 14.00
Chi., rolled steel	15.50 to 16.00
Cincinnati	12.00 to 12.50
N. Y., iron, deal.	10.50 to 11.00
Pittsburgh, iron	15.50 to 16.00
Pittsburgh, steel	18.50 to 19.00
St. Louis, iron	12.50 to 13.00
St. Louis, steel	14.00 to 14.50
East Pa. steel	18.50 to 19.00
East Pa. iron	15.00

NO. 1 CAST SCRAP

Birmingham, cup.	10.00 to 11.00
Buffalo	12.00 to 12.50
Boston, textile	11.50 to 12.50
Chicago, mach.	14.55 to 15.10
Chicago, railroad	11.75 to 12.35
Chicago, agri.	11.20 to 11.75
Cincinnati, mach. cupolas, gross	17.75 to 18.25
Cleveland, cupola	14.00 to 14.50
Detroit, net deal.	10.00 to 10.50
East Pa. cupola	14.50 to 15.00
N. Y. cup. deal.	10.25
N. Y., del. local foundries	15.00
Pittsburgh, cupola	14.00 to 14.50
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 mach.	12.50 to 13.00
St. Louis, No. 1	11.50 to 12.00

HEAVY CAST

Boston	10.50 to 11.00
Boston, mach. cast	14.00 to 14.50
Buffalo, breakable	8.50 to 9.00
Cleve., breakable	9.00 to 9.50
Detroit, auto, net Dealers	11.50 to 12.00
Det., break., deal.	7.00 to 7.50
Eastern Pa.	12.50 to 13.00
N. Y. No. 1 deal.	9.25 to 9.50
N. Y. break. deal	8.00 to 9.00
Pittsburgh	11.50 to 12.00

MALLEABLE

Boston, railroad	15.00 to 15.50
Buffalo	15.50 to 16.00
Chicago, agri.	13.00 to 13.50
Chicago, railroad	15.25 to 15.75
Cinn., R. R. deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail	16.00 to 16.50
Detroit, auto deal.	13.50 to 14.00
St. Louis, rail	13.00 to 13.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	12.00 to 13.00
Boston	9.00 to 9.50
Buffalo	13.50 to 14.00
Chicago	14.75 to 15.25
Eastern Pa.	15.00 to 15.50
New York	10.50 to 11.00
St. Louis	12.50 to 13.00

LOCOMOTIVE TIRES

Chicago, cut	15.50 to 16.00
St. Louis No. 1	13.00 to 13.50

LOW PHOS. PUNCHINGS

Chicago	13.50 to 14.00
Pittsburgh	18.00 to 18.50
Eastern Pa.	18.00 to 19.00
Buffalo	17.00 to 17.50

and equal grades. This is the lowest price at which scrap has moved here in months. Other grades feel the effect of these lower quotations in spite of lack of new orders.

Boston, June 3.—Iron and steel scrap continues dull. Price recessions are common and offerings are small. Several grades moved to lower levels in the past week.

Youngstown, O., June 3.—Placing of at least two orders for heavy melting steel at an advance of 25 cents a ton over prevailing prices is reported here. Two local independents were the purchasers.

Cleveland, June 3.—Iron and steel scrap shows further easiness this week with heavier grades again quoted fractionally lower. No. 1 heavy melting steel has receded to $12.25 to $13, the top of the range applying on material for the leading consumer. Steel for the second is around $12.25 to $12.50 with as low as $12 reported. No. 2 steel is proportionately lower. Other grades are also easy and for the most part nominal, due to lack of trading. No sales have been made to mills in the past few days, although one is reported negotiating for a tonnage at about $1 a ton under its last purchase.

Cincinnati, June 3.—Light shipments of iron and steel scrap marked operations last week. Quotations on rails are lower, rails for melting at $11.75 to $12.25 and short rails at $17 to $17.50. Norfolk & Western, and Chesapeake & Ohio railroad lists now current offer the usual tonnage.

Detroit, June 3.—Iron and steel scrap shows only one adjustment in price—a reduction of 50 cents in machine shop turnings, to $6.50 to $7—but the market appears weaker. Demand from outside consuming districts is lighter, and restricted offerings by automotive producers about keep pace. Hudson-Essex is selling a little less scrap; Chrysler a little more. Great Lakes Steel Corp., bringing in its new open-hearth plant here in August, is buying bundles and cut stampings, taking immediate delivery.

St. Louis, June 3.—Quiet and a downward trend continue in iron and steel scrap. Purchasing is at a minimum and confined almost entirely to small lots for prompt delivery. While admitting that prices are close to bottom, melters are not investing, and with but one or two exceptions, large yard interests are not laying down material.

Birmingham, Ala., June 3.—Iron and steel scrap shows no improvement and prices are nominal and weak, heavy melting steel being available at $10.75, delivered, with $12 the maximum for best quality.

Toronto, Ont., June 3.—Listless interest retards iron and steel scrap. A few small tonnage orders were received in the Hamilton district, but the general movement of steel scrap is light. The principal interest centered around machinery cast and a couple of fair orders were taken on this account. Stove plate and malleable scrap have limited call.

Philadelphia, June 3.—Heavy melting steel now is quotable at $13 to $13.50, although the only sale at $13 involved a distress lot of about 1000 tons. Efforts the past week to buy tonnage at $13 have been unavailing. Bethlehem Steel Co. continues to restrict shipments of unprepared scrap to Bethlehem and Steelton, Pa. This action is because shipments to those plants were large. The company is accepting only what can be handled without storage, to avoid expense of the latter. Bethlehem Steel Co. has bought 2500 tons of No. 1 melting steel at $13.25, delivered, Lackawanna.

Pittsburgh, June 3.—Heavy melting steel has advanced 50 cents to $15 to $15.50 on substantial sales at several points at both figures. Total sales the past week or more involve over 45,000 tons, materially stimulating an otherwise dull market. Strength in this grade is a contrast to continued weakness in other grades. Compressed sheets are unchanged while machine turnings and blast furnace grades are nominally lower.

New York, June 3.—Following a reduction of 50 cents at Claymont, Del., dealers here have reduced their buying prices on No. 1 railroad steel to $9 to $9.50, New York, compared with $9.50, previously. Other grades are unchanged, with demand generally sluggish. Several plants continue to hold up shipments.

Canadian Scrap

Dealers' Buying Prices

MONTREAL
Per Gross Ton

Iron axles	$19.00
Steel axles	17.00
Car wheels	14.50
Stove plate	12.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	14.00
Iron axles	16.00
Heavy melting steel	9.00
Turnings	7.00
No. 1 mach. cast (net)	15.00
Malleable (net)	11.50

Semifinished Steel

Semifinished Rebounds to $32—Market Steady in East—Sales Small

SEMIFINISHED STEEL PRICES, PAGE 98

Youngstown, O., June 3.—Diminution of operating rates of independent sheet mills in this district the past several weeks, which had the effect of bringing out a minimum price of $31 for sheet bars for a fortnight from outside competing mills, continues to cut down semifinished steel requirements. The same is true of slabs. But outside sales competition now has subsided to the point where $32, Pittsburgh and Youngstown, is the general asking price for billets, slabs and sheet bars, at which sales are being made sparingly.

Pittsburgh, June 3.—Semifinished material continues quiet in new business and specifications have moderated slightly during the past several weeks. Third quarter contracting has not been discussed. Prices remain nominal, generally at $32 for rerolling billets, slabs and sheet bars, but $31 still is heard. Wire rods are quieter but steady at $36. Skelp is slightly more acitve.

Philadelphia, June 3.—Billet prices here are unaffected by recent reductions in markets farther west and continue $33, base, Pittsburgh, for rerollers, plus $5 for forging quality.

Chicago, June 3.—Semifinished prices are nominal in view of the light buying of recent weeks. Demand dropped sharply late in May for billets, blooms and slabs. Fair shipments of sheet bars are being made. Wire rods show no change at $37, Chicago.

Cleveland, June 3.—Demand for sheet bars, billets and slabs is quieter, the leading merchant producer here having dropped two more of its open hearths, now operating eight of its 14 units. The market generally is $32, Cleveland and Youngstown, for sheet bars, billets and slabs.

Iron Ore

Prices Steady Despite Lower Foreign Ore—Shipments Off 41 Per cent

IRON ORE PRICES, PAGE 98

Cleveland, June 3.—Lower prices on foreign iron ore, as reported from New York in IRON TRADE REVIEW, May 29, have not affected the market for Lake Superior ore, producers say. Foreign ores cannot come far inland because of rail freight rates. An exception was noted recently, however, when less than an ocean ship cargo of a special grade of African ore was forwarded to the Youngstown, O., district. This was the first instance in many years when foreign ore was shipped so far inland. Practically all business in Lake Superior iron ore for the season has been closed on contracts. A few small open market sales, including one lot of 35,000 tons, was made during the week. Shipments in vessels from the Lake Superior district in May amounted to 6,979,213 tons, a decrease of 2,570,060 tons, or 26.9 per cent, from the tonnage shipped in May, 1928. Shipments this season to June 1 totaled 7,087,132 tons, a decrease of 4,978,382 tons, or 41 per cent, from the tonnage shipped in the comparable period of 1928. The Lake Superior Iron Ore association reports the following tonnages:

Port and Dock	To June 1 1929	To June 1 1930
C. & N. W.	972,852	432,067
C., M. & St. P.	282,445	114,097
MARQUETTE:		
D., S. S. & A.	142,103	61,158
L., S. & I	767,321	377,710
ASHLAND:		
C. & N. W.	926,572	519,436
Soo Line	606,543	200,983
SUPERIOR:		
Great Nor.	2,985,235	1,837,994
Soo Line	240,408	212,532
Nor. Pac.	124,079	133,122
DULUTH:		
D., M. & N.	3,770,288	2,174,503
TWO HARBORS:		
D. & I. R.	1,247,668	1,023,530
TOTAL	12,065,514	7,087,132
1930 Decrease		4,978,382

Bars

Future Buying Is at Slower Rate —Spot Tonnages Rule—Prices Show Little Change

THAT buying of soft steel bars is not falling below the rate of April is the best that can be said. Forward buying is in less evidence and spot lots for immediate delivery are the rule. Prices are unchanged but usually at the minimum of the spread. Implement and tractor builders at Chicago are lowering requirements and automotive needs are growing smaller.

BAR PRICES, PAGE 97

Chicago, June 3.—Spot sales of bars and other heavy finished material show little change, but forward buying grows lighter. A leading producer finds specifications have fluctuated only a few points in the past three weeks. Implement and tractor orders are being reduced and are unlikely to gain until after July 1 inventories of a number of implement works. A fairly broad miscellaneous consumption of soft steel bars is reported. Deformed bars for concrete road and building work are said to be up to the average of the last two years. Road machinery and excavating equipment builders are busy. Forgers still are working on the recent Ford releases. Soft steel bars are quoted at 1.85c, Chicago, and bar iron at 1.90c. Bar iron orders are chiefly from freight car builders.

New York, June 3.—Steel bars are unchanged at 1.75c, Pittsburgh. Trading is sluggish, with deliveries ranging two to three weeks on the general run of orders.

Pittsburgh, June 3.—Steel bar demand continues to drag. May tonnage showed little change from that of April, although the recent trend in specifications has been downward and lighter requirements of the automotive industry are looked for this month. Orders still involve only small lots. Heavy demand for reinforcing bars is offsetting to a certain extent the reduced demand for the merchant grade and holds bar mill operations at a fair level. The market is steady at 1.75c.

Cleveland, June 3.—Demand for soft steel bars is ebbing slowly, chiefly reflecting the automotive situation. Producers see nothing to warrant hope for improvement this month. Local mills ask 1.80c, Cleveland, for the average run of business, with concessions made for attractive business. Outside mills meet 1.80c, Cleveland, in Cleveland.

Detroit, June 3.—A slightly lower tendency is manifest in demand for soft steel bars. Automotive use as a whole will be moderately lower this month, from present indications. Ford is not buying because of over-shipment in May. Buick and Chrysler orders are higher. Chevrolet shows little change. For general users bars are 1.75c, base, Pittsburgh. Cleveland mills quote 1.75c, Cleveland, to preferred consumers.

Twin City Boiler Works Inc., Bristol, Va., has changed its name to the Bristol Steel & Iron Works Inc. and increased capital $15,000 to $200,000.

Large Compressor Order to Cooper-Bessemer

The Cooper-Bessemer Corp., Mt. Vernon, O., announces an initial order for more than 15 large 1000-horsepower compressors from the Missouri-Kansas Pipe Line Co. for use in the company's $40,000,000 natural gas pipe line development. The amount involved in the initial order is nearly $1,000,000. The Missouri-Kansas Pipe Line Co. is constructing a 1250-mile line from Panhandle, Tex., to Indiana.

As a result of the current developments in the natural gas industry, Cooper-Bessemer Corp. is experiencing a rapid increase in business and its plants at Mt. Vernon, O., and Grove City, Pa., are running at 100 per cent capacity, according to B. B. Williams, president.

Algeria Ships Iron Ore

Philadelphia, June 3.—Imports at this port during the week ending May 31 included 1220 tons of chrome ore from Greece, 7550 tons of iron ore from Algeria, 30 tons of steel bars from Belgium, and 49 tons of structural shapes from Belgium.

Officers for the year 1930-31 recently elected by the Chicago chapter of the American Society for Steel Treating are as follows: Chairman, D. L. Colwell, Stewart Die Casting Co.; vice chairman, Harry Hardwicke, Ludlum Steel Co.; secretary-treasurer, J. A. Comstock, 318 Peoples Gas building.

Plates

Refinery and Ship Work Heavier —29,000 Tons of Steel Placed for Two Boats—East More Active

DEMAND for plates continues active at Chicago, where 10,000 tons were placed during the week for western refinery work, with 20,000 tons for the oil industry still pending. The two leading interests will supply a total of 29,000 tons of steel, mainly plates, for two United States Lines vessels recently awarded. Business at Pittsburgh shows a moderate decline.

PLATE PRICES, PAGE 97

Chicago, June 3.—Actual and prospective oil refinery tank work on the Pacific coast and in the Oklahoma-Texas area and recent gas line pipe bookings are featuring the plate market, helping to offset declines in other finished steel specifications. Plate mills are engaged above 80 per cent. Nearly 10,000 tons in fresh inquiry for oil tank work in the Southwest has increased total inquiry to about 20,000 tons. From 3000 to 4000 tons have been awarded for refinery construction work on the Pacific coast by one producer. Another mill has booked nearly 6000 tons for the Southwest, making about 10,000 tons for refineries. While universal plate backlogs have been reduced, shipments remain heavy on previous orders. Freight car shops working on orders for the Van Sweringen lines are taking moderate shipments. Plate prices are unchanged at 1.80c, Chicago.

New York, June 3.—Demand for plates is slightly improved, with diversified inquiries more numerous. Prices appear steady at 1.80c to 1.85c, Coatesville, Pa. Recent ship construction contracts have resulted in little buying of plain material to date, but a portion of this tonnage is likely to be closed soon. Two derrick barges awarded for the New York Central railroad, require a total of 500 tons. Railroad demand is lacking.

Pittsburgh, June 3.—Incoming plate tonnage continues to decline moderately and is less active than a month ago. May tonnage, however, compared favorably with that of April. Business is fairly well distributed with fabricators active buyers. Requirements of freight car and barge builders in this district remain light. Sheet piling is fairly active, with considerable work pending. Plates generally are 1.70c, Pittsburgh.

Philadelphia, June 3.—Further improvement is noted in plate demand, causing eastern makers to look forward more cheerfully. Mill operations have mounted sharply and now range from 50 per cent to practically full, with the average apparently 80 per cent. The market generally is 1.80c, base, Coatesville, and is the firmest in a long time as few special prices be-

low 1.80c are outstanding. Consumers generally are paying 1.80c without protest. Bethlehem Steel Co. will supply 14,500 tons of steel, mainly plates, for one vessel for the United States Lines to be built by the New York Shipbuilding Corp. United States Steel Corp. subsidiaries will supply 14,500 tons for another United States liner. Canadian Pacific railroad is inquiring for 20 locomotives requiring a total of 800 tons of plates.

Cleveland, June 3.—Plate demand is more active, though orders are small. Total tonnage is seasonally low. Practically every consuming line is represented in a week's orders, but nothing is being anticipated and nothing is being taken for stock. Plates are 1.70c to 1.75c, Pittsburgh.

CONTRACTS PLACED

14,500 tons, mainly plates, for United States Lines vessel, to Bethlehem Steel Co.
14,500 tons, mainly plates, for United States Lines vessel, to United States Steel Corp. subsidiaries.

CONTRACTS PENDING

500 tons, two derrick barges for New York Central railroad. Truss Weld Co., Elizabeth, N. J., low on welded construction and Dravo Contracting Co., Pittsburgh, low on riveted construction.

Stockholders Vote Sale of Winton Engine

Cleveland, June 3.—Stockholders of the Winton Engine Co. today approved formally the acquisition of their company by General Motors Corp., following directors' approval of the plan late last month. The Winton company will add its manufacture of diesel and gasoline engines for marine and industrial use to the long list of General Motors' products. The merger will be effected by the exchange of 1 1/3 General Motors common share for each share of Winton Engine common or preferred. General Motors will issue 126,667 additional shares to carry out its acquisition.

Deny Truscon to Merge

Youngstown, O., June 3.—While circumstantial stories have been published in the daily press here relative to a purported merger move between the Truscon Steel Co. and the General Fireproofing Co., both of this city, Julius Kahn, president of the Truscon company, and George C. Brainard, president of General Fireproofing company, yesterday strongly denied knowledge of any such proposed merger.

Shift Hardware Standard

Washington, June 3.—The bureau of simplified practice, department of commerce, has incorporated its simplified practice on builders hardware (non-template) in commercial standard CS 22-30.

Pipe

Open Inquiries for Cast Iron Pipe Drop—California Buyers Active—Two Pipe Lines Let

ADVERTISED projects requiring cast pipe are fewer in midwest states but are fairly numerous in California. Five inquiries there total 2332 tons. Massachusetts is reported to have awarded 2500 tons. Utilities and general contractors are buying larger sizes but railroads buy in carloads. A. O. Smith Corp. takes another 18,000-ton order for steel line pipe.

PIPE PRICES, PAGE 98

Pittsburgh, June 3.—Larger sizes of lapweld pipe remain active and mills are in a favorable position in unfilled tonnage of this material. Buttweld pipe is in relatively poorer demand and since building operations fail to improve rapidly the outlook is regarded as less satisfactory than a month ago. No additional pipe lines have been placed in this district: the A. O. Smith Corp. has received 18,000 tons for a 115-mile line of 16 and 18-inch pipe for the Southwestern Natural Gas Corp. This duplicates a line of similar tonnage recently placed by that corporation. A number of other lines are reported active but no additional awards are noted. Lapweld operations have been increased, currently averaging around 75 per cent. Buttweld production is lower, however, with the average for all departments around 60 per cent.

Boston, June 3.—Warren Foundry & Pipe Co. is reported to be the successful bidder on 2500 tons of 12 to 60-inch cast pipe for Massachusetts. Lowell and Malden, Mass., awarded 110 and 170 tons, respectively. General contractors have recently been active in buying. The 6-inch and larger sizes are quoted $36 to $37, base, foundry.

New York, June 3.—Cast iron pipe prices are firm at $38.50 to $40.50, base, delivered New York. A fair volume of business is pending. New York takes bids June 13 on 100 tons of 6 and 12-inch pipe and about 25 tons of fittings. Three thousand feet of cast pipe of various sizes for Panama has been awarded American Cast Iron Pipe Co.

Chicago, June 3.—Advertised cast pressure pipe work in Illinois, Indiana and Wisconsin is extremely light, but private orders are holding up with a year ago. Peoples Gas Light & Coke Co. and several other utility interests closed on additional tonnages of larger sizes. Railroad buying is largely in carload lots. Chicago board of public works is inquiring for 100 tons of fittings. Private and contract work is moving on the basis of $37 to $38, base, Birmngham.

Birmingham, Ala., June 3.—A few cast pipe lettings were made during the past week or two. Shipments are keeping pace with production, shops still operating five days weekly, and in some instances three shifts. Two or three specifications are being bid on by southern pipe manufacturers who expect the business will be placed here. Practically all tonnage coming to Birmingham shops is for use west of the Mississippi river. The quotation base is unchanged.

Youngstown, O., June 3.—While there has been considerable talk about the increased amount of large wrought pipe business that is being placed by natural gas and petroleum products producers, the fact is only a small part of the reported tonnages are on mill books so far. None of the largest western pipe mileages as yet has been placed. Makers admit they have submitted a large number of bids on various projects, but many of the projects still are to be organized and financed. Mills are hopeful that much of the pipe may be rolled in the coming summer. At present a fair amount of pipe business, small in individual tonnages but fairly satisfactory in the aggregate, is coming to mills here, leading them to expand operations. This appears true mainly of lap-welded pipe, as butt-welded pipe business appears to be falling off, due to restriction of building operations.

CONTRACTS PLACED

2500 tons, 12 to 60-inch cast pipe for Massachusetts; reported let to Warren Foundry & Pipe Co.
170 tons, cast pipe for Malden, Mass., to United States Pipe & Foundry Co.
110 tons, cast pipe for Lowell, Mass., to R. D. Wood & Co.
Unstated tonnage, 3000 feet of cast pipe, various sizes, for Panama, to American Cast Iron Pipe Co.

STEEL PIPE AWARDS

18,000 tons, 115 miles of 16 and 18-inch welded steel pipe, Southwestern Natural Gas Corp., to A. O. Smith Corp.
15,000 tons, 200 of eventual 750 miles 8-inch steel line pipe, Phillips Petroleum Co., reported let to Youngstown Sheet & Tube Co.

CONTRACTS PENDING

831 tons, 8 and 12-inch class B or 150, cast pipe for Fullerton, Calif.. bids June 17.
657 tons, 6 and 8-inch class B cast pipe, Manchester avenue improvement, Los Angeles; bids June 23.
384 tons, 6 to 16-inch class B cast pipe, Moreno boulevard improvement, San Diego, Calif.; bids June 9.
350 tons, 4 to 8-inch class 150 cast pipe, Main street improvement, Santa Ana, Calif.; bids June 9.
250 tons, cast pipe for Fitchburg, Mass.; no award as yet.

110 tons, 4 to 8-inch class 150 cast pipe, district No. 10 improvement, Fullerton, Calif.; bids June 3.
100 tons, 6 to 10-inch cast pipe for Nashua, N. H.
100 tons, cast pipe fittings for Chicago; bids in.

Tin Plate

Heavier Shipments Expected This Month—Output Slower

TIN PLATE PRICES, PAGE 98

Pittsburgh, June 3.—Tin plate specifications continue steady. Demand and shipments make a favorable showing for this period. June shipments are expected to be heavier than those of May, which is the usual seasonal trend. Considerable material has been produced in anticipation of June requirements, however, and operations are not expected to be increased this month. Production has tapered slightly and currently is at 75 to 80 per cent, with the leading interest at the lower figure. The market continues $5.25 per 100-pound base box, and this price will be continued on second-half contracts.

Refractories

May Sales Smallest of Year but Prices Remain Steady

REFRACTORIES PRICES, PAGE 98

Pittsburgh, June 3.—Sales of refractory brick have been light and May business was the smallest for the year and well below May, 1929. Demand for boiler brick has been considerably ahead of last year's rate but this has been more than offset by light requirements of the iron and steel industry for repair work and new construction. A few blast furnace relinings were placed recently but this work is considerably less active than early in the year. Steel mills are doing only necessary repair work and new construction is quiet. Prices are steady and unchanged, with first quality fire clay and silica brick $43 and magnesite brick $65. Domestic magnesite continues $22.

Oil and Gas Power Body Will Assemble

State College, Pa., will be the scene of the third national meeting of the oil and gas power division of the American Society of Mechanical Engineers and the fourth annual Penn State Oil Power conference, June 12-14. Five technical sessions have been arranged at which 16 papers will be featured. Some of the subjects to be covered in the papers and discussion are power plant economy and layout; fuel oil research; superchargers; lubrication; light weight developments in design; torsional vibration; and diesel, natural gas and oil engines. An exhibit of oil engines, parts and accessories has been arranged in connection with the program.

Sheets

Market Less Active—Youngstown District Down to 50 Per Cent—Philadelphia Demand Up

SEASONAL influences are tending to check sheet demands. A moderate decline in new business is noted at Pittsburgh and Youngstown, with operations in the former district at 65 per cent, and in the latter about 50 per cent. Chicago district mills began the week with full operations, with prospect of slowing up toward midweek. The eastern market is more active.

SHEET PRICES, PAGE 97

Pittsburgh, June 3.—Sheet demand continues to taper slowly, while operations also are lower with the industry currently around 65 per cent. The decline in specifications and new business is well distributed. Requirements of the automotive industry have been fairly well maintained. Most of the decline in sheet requirements is a reflection of seasonal trend in operations of various industries. Prices appear fairly steady at recent levels of 2.55c for black sheets and 3.20c for galvanized. Blue annealed sheets generally are 2.15c, with blue annealed plates 2.00c. On some of the wider widths that are removed from competition with the continuous mill product higher prices occasionally are applied. Autobody usually are 3.70c.

Buffalo, June 3.—Demand for sheets from the automotive industry continues below expectations. Some mills specializing on automotive sheets are operating at only 40 to 50 per cent.

Cleveland, June 3.—Sheet orders are small. Mills do not receive specifications until the sheet fabricators receive releases from their customers. Some mills are endeavoring to hold to 2.65c, Pittsburgh, on black sheets, with a 2.55c minimum on large tonnage. Others quote 2.55c on small lots. Galvanized sheets are 3.20c to 3.25c; autobody 3.70c, and metal furniture and vitreous enameling stock 3.80c. No. 13 gage blue annealed sheets are 2.15c to 2.25c.

Cincinnati, June 3.—New business of district sheet mills improved during the past week. Production schedules were held to previous levels.

St. Louis, June 3.—Sheet purchases by the general manufacturing trade and jobbers continue on a conservative basis. Demand from the building industry shows signs of improvement. Shipments during the last half of May fell slightly below the average for the first half. The market lacks firmness.

Detroit, June 3.—Specifications of automotive users of sheets for June indicate a decline from May, with no prospects at this distance of improvement in July. Ford releases are scanty, due to over-supply last month. Buick and Chrysler are better takers. Chevrolet is easing slightly. Other makers as a whole will probably consume less material this month than last. Local producers operate fair, but on a week-to-week basis. Autobody sheets are 3.70c, base, Pittsburgh, but net prices which many buyers act upon are less than the sum of 3.70c plus full extras. Black sheets are reported shaded $1 and $2 below the recent 2.55c level.

Chicago, June 3.—Sheet orders continue irregular. No marked drop in backlogs is occurring and mills are operating in full, although it is probable a decline may result before the end of the week. It is pointed out that the bottom apparently has been reached in prices. Producers see no further need of reductions soon. Mill prices are unchanged at 2.65c for No. 24 black; 3.30c for No. 24 galvanized; 2.25c to 2.35c for No. 13, and 2.10c to 2.20c for No. 10 blue annealed.

New York, June 3.—For the third consecutive week sheet prices here are unchanged. Galvanized sheets are 3.20c, Pittsburgh; black, 2.55c; blue annealed sheets, 2.00c; and blue annealed plates, 2.15c. Business is moderate.

Philadelphia, June 3.—Sheet demand is more active and bookings for some mills in the past week showed an increase of about 25 per cent over those of any prior week in the second quarter. Prices on some grades are lower. Black sheets have settled to 2.55c, base, Pittsburgh, for one-pass cold rolled, subject to occasional concessions on especially desirable tonnage, while the usual differentials are allowed on highly finished sheets taking heavy extras. Galvanized sheets have settled to 3.15c, Pittsburgh. Blue annealed are steady at 2.00c and 2.10c, Pittsburgh.

Youngstown, O., June 3.—Diminishing volume of sheet specifications coming to independent mills is steadily reducing the number of units in operation. Entire sheet plants are being affected adversely at Niles, Warren and Leavittsburg. Salesmen report from the southern Michigan district that difficulties are increasing, due to restriction of automotive output. Common sheets are as hard to sell as autobody. Black sheets are 2.55c, Pittsburgh; autobody, 3.70c; galvanized, 3.20c; and blue annealed, 2.00c for Nos. 9 and 10, and 2.15c for No. 13 gage.

Johnson Fan & Blower Co., Chicago, has increased its capital from $50,000 and 2500 shares no par value to $50,000 and 37,500 shares no par value.

Structural Shapes

Center of Market Interest Now in West—Chicago Reports 13,680 Tons Let in Five Jobs—Heavy Engineering Work Up in East

SCENES of most structural market activity for the week under review have shifted from the East to the Middle West. While New York has many large projects under consideration, awards there have been scattered and mostly small. On the other hand attractive work in the Chicago district is reported let, a 4600-ton terminal, 2800 tons of bridge work and an 1800-ton power house. Industrial work is more active with a 3000-ton paper mill, a 2000-ton automobile plant, an 1100-ton plate mill and a 1000-ton automotive parts plant up in Florida, California, Alabama and Indiana, respectively. At New York, bridge approaches taking 4000 tons, subways 15,000 tons and roadway 16,000 tons, will soon be acted upon, and New York Central's work means 90,000 tons.

STRUCTURAL SHAPE PRICES, PAGE 97

New York, June 3.—Structural lettings have declined. May awards were heavy, probably the largest of the year. Pending work also is extensive. Two subway sections will take 15,000 tons and approaches for the Hudson river bridge will take considerable steel, 4000 tons of shapes being included under two contracts on the New York side. The west side elevated highway from Fifty-ninth to Seventy-second street will take about 16,000 tons of shapes. New York Central's west side tracks will run under this project and its west side development will require in excess of 90,000 tons of steel, according to estimates covering several years. Subway construction up to June 1 had taken 36,660 tons. Prices are being shaded on large tonnages, but efforts to stabilize prices on plain shapes are being made with some success.

Chicago, June 3.—Fresh structural inquiry totals slightly more than 5000 tons. It largely is in two types of work characteristic of building activity in the West this year, industrial and public works construction. More than 30 per cent of current building contracts is for public works and utilities. Car shop orders for light shapes are fair and likely will continue into the first week of July. Structural mills operate 70 per cent. Prices are based on 1.80c, Chicago.

Boston, June 3.—Only small tonnages were awarded last week in the structural market. Pending jobs also are small. A grandstand at Malden, Mass., 101 tons, and Boston & Albany bridge repairs at Brookfield, Mass., 100 tons, are up. Thomas P. O'Connor, South Boston, was awarded the general contract for the junior high school, Newton, Mass., but steel contracts have not been sublet as yet.

Buffalo, June 3.—Structural and rail mills are operating on double turn in this district. One new inquiry calling for more than 1500 tons for a Lackawanna bridge is reported out.

Philadelphia, June 3.—Shape demand has improved and eastern mills operate 70 to 80 per cent. Although a somewhat firmer attitude prevails in some quarters, shape prices have not actually changed and plain standard material continues 1.70c to 1.85c, base, eastern mill.

Pittsburgh, June 3.—Structural awards in this district are light. Most individual jobs take less than 100 tons. Specifications for plain material show little change and May tonnage compared favorably with that of April. The market is steady at 1.70c, Pittsburgh.

Cleveland, June 3.—One of the largest industrial structural jobs let locally in several weeks has gone out of town. Fisher Body Ohio Co. has let its die stamping building and shipping dock to Mahon Structural Steel Co., Detroit, 675 tons. Otherwise lettings are small. A large amount of work is pending, several civic projects being due to appear within the next few weeks. Plain material is 1.70c to 1.75c, Pittsburgh, with preferential figures for large tonnages.

Birmingham, Ala., June 3.—Easing off of structural business is reported. Only a few contracts are being awarded and most of these involve 100 tons or less apiece. Several larger specifications are in sight. Virginia Bridge & Iron Co. was awarded two bridges on Louisville & Nashville railroad in Kentucky and Tennessee. Among pending contracts is that of the International Paper Co. mill at Panama City, Fla., 3000 tons, and at the plate mill of the Tennessee Coal, Iron & Railroad Co., Fairfield, Ala., 1100 tons. A hotel in Atlanta, Ga., will also furnish some tonnage. Shops here, after several weeks on double turns in some departments, are now down to five days a week. Necessary betterments or repairs are being made.

CONTRACTS PLACED

4600 tons, terminal, Railway Express Agency, Milwaukee avenue, Chicago, to American Bridge Co.

3000 tons, building, Northwestern Bell Telephone Co., Minneapolis, to Minneapolis-Moline Power Implement Co.

2800 tons, bridge work, Chicago Great Western railroad, 1700 tons to American Bridge Co., and the remainder to McClintic-Marshall Co. and Pittsburgh-Des Moines Steel Co.

1800 tons, power house, Indianapolis Power & Light Co., Indianapolis, to Hetherington & Berner Inc.

1800 tons, building, Pittsburgh Plate Glass Co., Ford City, Pa., reported placed with Jones & Laughlin Steel Corp.

1480 tons, highway bridge over Wisconsin river, Bridgeport, Wis., to Lakeside Bridge & Steel Co.

1000 tons, hospital, Central Islip, Long Island, N. Y., additional tonnage, second group buildings, to National Bridge Co.

675 tons,, die stamping building and shipping dock, Fisher Body Ohio Co., Cleveland, to Mahon Structural Steel Co., through S. W. Utley & Sons Co., Detroit, general contractor.

500 tons, New York state highway bridges, to American Bridge Co.

500 tons, administration building, Chicago Fair, Chicago, to Gage Structural Steel Co.

400 tons, bridge, Pennsylvania railroad, Pittsburgh, to McClintic-Marshall Co.

300 tons, viaduct, Chicago & Alton railroad, Crawford avenue, Chicago, to Hansell-Elcock Co.

295 tons, bridge, New York Central railroad, Depew, N. Y., to Bethlehem Steel Co.

260 tons, prison, Clinton, N. Y., to Kellogg Structural Steel Co.

250 tons, garage, Westchester County Lighting Co., Pleasantville, N. Y., to American Bridge Co.

220 tons, school Penwynne, Pa., to McClintic-Marshall Co.

210 tons, two bridges, Baltimore & Ohio railroad, to Shoemaker Bridge Co.

200 tons, bridges in Kentucky and Tennessee, Louisville & Nashville railroad, to Virginia Bridge & Iron Co.

200 tons, breaker building, at Grand Saline, Tex., for Morton Salt Co., Chicago, to Worden-Allen Co.

170 tons, Laurel, Md., District of Columbia work, to Brown-Fayre Co.

150 tons, addition, Lawrence college, Westchester county, N. Y., to Guibert Steel Co.

150 tons, bridge, Pennsylvania railroad, Weirton, W. Va., to Bethlehem Steel Co.

125 tons, highway bridges, New Hampshire, to American Bridge Co.

100 tons, building, Cherry Hill, Va., through District of Columbia commissioners, to Bethlehem Fabricators Inc.

100 tons, bridge, Teanaway creek, Kittitas county, Wash., to Wallace Bridge & Structural Steel Co.

Awards Compared

	Tons
Awards this week	21,285
Awards last week	37,880
Awards two weeks ago	34,180
Awards this week in 1929	59,660
Average weekly awards, 1930	34,539
Average weekly awards, 1929	42,213
Average weekly awards, May	48,522
Total awards to date, 1929	976,789
Total awards to date, 1930	794,389

CONTRACTS PENDING

14,700 tons, subway, route 108, section 8, Seventy-first road to Union Turnpike, Queens, N. Y.; bids late in June.

4000 tons, New York approach, Hudson river bridge, requirements under two contracts, 1000 and 3000 tons, respectively, to be placed about July 15.

3000 tons, paper mill, International Paper Co., Panama City, Fla.

2200 tons, north approaches, Wabash avenue

bridge, Chicago.
2000 tons, plant Ford Motor Co., Richmond, Calif.; bids soon.
1500 tons, administration building, department of education, Philadelphia.
1500 tons, city bridge, Ridge road, Lackawanna, N. Y., bids about July 1.
1300 tons, headquarters building, board of education, Cleveland; bids due at city hall June 20.
1100 tons, plate mill, Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.
1000 tons, factory, Bendix Aviation Corp., South Bend, Ind.
900 tons, building, Chicago Yacht club, Chicago.
600 tons, distributing station, Sheffield Farms, Brooklyn, N. Y.
500 tons, school, Mineola, Long Island, N. Y.
500 tons, building, Toledo Scale Co., Toledo, O.
400 tons, high school, Rye, N. Y.
400 tons, subway, Worth street connection, New York; bids about June 15.
350 tons, four arches, Fulton road bridge, Brookside park, Cleveland; Hunkin-Conkey Construction Co., general contractor, expected to sublet contracts this week.
300 tons, building, Harvard university, Cambridge, Mass.
200 tons, building, Harshaw Chemical Co., Cleveland.
150 tons, junior high school, Newton, Mass.; general contract to Thomas P. O'Connor, South Boston, Mass.
101 tons, grandstand for athletic field, Malden, Mass.
100 tons, repairs, Boston & Albany bridges, Brookfield, Mass.

Decline in Pails, Tubs

Washington, June 3.—April output of pails and tubs dropped from March's level and was considerably under the total set in April, 1929, although production of other classifications of galvanized sheet metal ware rose in April and has displayed an upward trend since December, 1929. Figures on pails and tubs shipments for April are not yet available in the following department of commerce monthly comparison:

(In dozens)

	PAILS, TUBS		OTHER WARE	
1929	Production	Shipments	Production	Shipments
April	165,155	171,722	55,778	55,632
Total (4 mos.)	678,582	719,796	206,953	185,406
May	176,622	150.501	43,370	38,597
June	98,857	104,762	37,479	35,334
July	105,454	109,841	42,384	44,117
Aug.	107,004	108,461	53,250	54,860
Sept.	113,698	120,297	46,594	52,970
Oct.	129,282	135,197	45,117	49,511
Nov.	102,400	90,684	32,951	30,123
Dec.	112,962	107,733	33,114	25,441
Total year	1,624,811	1,647,272	541,212	516,359
1930				
Jan.	145,588	154,731	33,982	29,165
Feb.	119,739	129,853	35,121	31,536
March	135,178	135,602	37,963	38,160
April	131,015	.....*	44,058	44,276
Total (4 mos.)	531,520	.....	151,124	143,137

*Figure not yet available.

Shorten Canadian Shifts?

Toronto, Ont., June 3.—Officials of the British Empire Steel Corp., Sydney, N. S., state that the 8-hour day will be adopted "as soon as conditions allow. At present the plants of the corporation are operating on 10 and 12-hour shifts.

In 1590, ten years after establishing the first foundry at Dartford, England, Godefroi de Bochs set up the first iron mill for slitting bars.

Concrete Bars

Awards About on Parity With 1929—Outlook Good—Many Large Jobs Pending

VOLUME of lettings as well as inquiries holds up well and compares favorably with a year ago. Action on many large tonnage jobs, however, continues to be deferred, leaving present contracts placed small but diversified. Road work is the important item in the Chicago market, Illinois having 2000 tons up for prompt purchase. A 1750-ton bridge was let at Pittsburgh.

REINFORCING BAR PRICES, PAGE 97

New York, June 3.—Concrete reinforcing bar prices are being shaded on large lots. Volume holds up well, total tonnage running slightly ahead of last year. A new subway section to come out next month will take more than 800 tons. Two buildings will take approximately 1000 tons each. About 100 tons of bars will be needed for the initial work on the New Jersey approach of the Hudson river bridge.

Boston, June 3.—Small lettings in concrete bars totaled about 200 tons last week. Such jobs carry fairly firm quotations.

Philadelphia, June 3.—Concrete bars in cut lengths in carloads are now generally quoted 1.85c, base, Pittsburgh, equivalent to 2.14c, delivered Philadelphia.

Pittsburgh, June 3.—Concrete reinforcing bar demand holds well. May tonnage showed a fair increase over that of April and for one producer was the largest in history. The June outlook is regarded as favorable, with considerable work pending. Local awards involve lots of less than 100 tons at a time although the aggregate of these is fairly large. Prices generally are unchanged at 1.75c to 1.80c for stock lengths and 2.00c to 2.05c for cut lengths.

Cleveland, June 3.—Awards are scarce in concrete bars and only a few small new inquiries are out. Brookside park bridge still is held up. A large tonnage will be bought later for the civic stadium in connection with which the city now is advertising for site grading bids. Remaining piers for Central-Lorain bridge will take a fair tonnage but this now is held up indefinitely on account of labor difficulties. An exchange building for Ohio Bell Telephone Co. will need about 150 tons. Prices are fairly steady at 1.65c to 1.70c, Cleveland.

Chicago, June 3.—Illinois road work and the Galesburg, Ill., sewage treatment tunnel, 1500 tons, are bringing out important reinforcing bar tonnage. Concrete bar lettings are up to the last two years' average for this season. Much small tonnage is out for figures and is being let. Rail steel reinforcing bars are weak at 1.70c to 1.75c, but road work bar prices are steady. Nearly 2000 tons of Illinois road work is being bought this week.

CONTRACTS PLACED

1750 tons, George Westinghouse bridge, Turtle Creek, Pa., to McClintic-Marshall Co.
800 tons, prison, Clinton, N. Y., to Kalman Steel Co.
300 tons, Iowa state road work, to several fabricators.
300 tons, Wisconsin state road work, to Olney J. Dean Co.
124 tons, Verdugo Wash storm drain, Los Angeles, to Los Angeles Iron & Steel Co.
124 tons, paving in Humboldt county, Sacramento, Calif., to unstated interest.
100 tons, remodeling work on state capitol, Atlanta, Ga., to Kalman Steel Co.
100 tons, administration building, Chicago World's Fair, Chicago, to Inland Stele Co.
100 tons, church, Minneapolis, to Laclede Steel Co.

CONTRACTS PENDING

800 tons, coaling stations for Pennsylvania and New York, New Haven & Hartford railroad, general contract to Roberts & Schaefer Co.
800 tons, subway, route 108, section 8, Seventy-first road to Union Turnpike, Queens, N. Y.; bids late in June.
415 tons, Washington street bridge, Los Angeles; bids June 25.
350 tons, bridge over Salinas river, Monterey county, Calif.; bids opened.
300 tons, city bridge, Ridge road, Lackawanna, N. Y.; bids about July 1.
170 tons, paving in Tehama county, Sacramento, Calif.; bids June 18.
150 tons, office addition, 6235 Hollywood boulevard, Los Angeles; bids being taken.
150 tons, Melrose-Woodbine exchange building, Ohio Bell Telephone Co., Cleveland; bids being asked.
Unstated tonnage, school, Philadelphia.

Awards Compared

	Tons
Awards this week	3,698
Awards last week	5,023
Awards two weeks ago	9,287
Awards this week in 1929	5,128
Average weekly awards, 1929	5,849
Average weekly awards, 1930	6,958
Average weekly awards May	8,227
Total awards to date, 1929	151,649
Total awards to date, 1930	160,029

Research Would Improve Steel Castings

Elimination of pin holes in steel castings poured into moist sand molds, and the necessity for maintaining higher strength and ductility in answer to the demands of industrial

users has become the subject of extensive research by the bureau of standards, Washington, which has carried out preliminary investigations on the subject. In the work, a study was made of the strength, ductility, and soundness of steel castings involving many foundry variables. If the composition was maintained between 0.10 and 0.17 per cent carbon, the manganese between 0.60 and 0.70 per cent, and the silicon between 0.30 and 0.40 per cent, the addition of the customary aluminum shortly before pouring was found to give steel castings which were usually within the specified limits of ductility after the heat treating operation.

When the carbon was too low there was found to be danger of not meeting the tensile strength requirement of 60,000 pounds per square inch. The variables having the greatest effect on ductility were found to be metals used for degasification or deoxidation. None of these deoxidizers such as ferroboron, silicon, berryllium, etc., were superior to aluminum in producing soundness. Some experiments were made with mold preparations in the form of surface treatments with aluminum and powdered deoxidizers for counteracting the mold moisture, but the experiments were not promising. It was found, however, that a sufficient amount of deoxidizer should be in the steel at the time of pouring to deoxidize the steel from any gases evolved from the moisture of the mold.

Bulletin Describes Tests of Spliced Columns

Destructive tests of steel columns consisting of H sections connected with splice plates bolted to plates welded between the flanges and loaded transversely have been completed by the bureau of standards, Washington, and the results are given in research paper 157 of the bureau entitled "Transverse Tests of H-section Column Splices," by James H. Edwards, chief engineer, American Bridge Co., New York, and H. L. Whittemore, principal mechanical engineer, and A. H. Stang, engineer, both of the bureau.

Plates were welded to the outer edge of the inside faces of the flanges of 3-foot lengths of 10, 12 and 14 inch H sections. The H sections were joined in pairs by splice plates bolted to these welded plates to represent a spliced section of column for use in a steel frame building.

The specimens so formed were tested as beams on a 66-inch span with loads at the quarter points. Four specimens were tested with the splice plates and H section webs parallel to the applied loads which were in a vertical plane; three specimens were tested with the splice plates and H section webs perpendicular to the applied loads.

The behavior of the specimens is described in the bulletin and a method of stress analysis suitable for use in designing similar splices is developed. Copies of the bulletin may be obtained from the superintendent of documents, Washington, for 10 cents.

Rails, Cars

40,000-ton Rail Inquiry Expected —Car Awards Slacken—Inquiry Rate Falls—Locomotives Quiet

EXCEPT for spasmodic purchases rails are quiet. Norfolk & Western is expected to buy 40,000 tons soon, also steel tires and riser plates. Other roads prepare to issue third quarter steel inquiries. Car awards are small and scattered; inquiries total 3400. May car purchases, aggregating 1891, make the total for the first five months 31,076, or 25,854 cars less than in 1929.

RAILROAD TRACK PRICES, PAGE 98

New York, June 3.—Several eastern railroads are inquiring for third quarter requirements. Norfolk & Western will take bids at Roanoke, Va., June 11 for third quarter locomotive steel tire needs and 8600 steel riser plates. Pennsylvania railroad will take bids June 10 on structural steel and steel wheels.

Domestic freight car awards of 1286 cars in May brings the total for the first five months up to 31,076, as compared with 56,930 in the corresponding period of last year and 25,912 in the first five months of 1928. Last month's bookings were the lightest this year, falling under the previous low total of 1891 in April. A comparative statement follows:

	1930	1929	1928	1927	1926
Jan.	4,966	13,196	4,160	14,710	8,830
*Feb.	16,921	15,944	10,220	5,960	12,895
*March ..	6,012	12.023	2.958	4,955	8,895
*April ..	1,891	8.205	6,043	3,675	4,615
May	1,286	7,562	2,531	5,425	4,448
Total 5 Mo.	31,076	56,930	25,912	34,725	34,688
June	.....	5,886	2,422	7,440	4,285
July	.....	341	582	2,295	1,265
Aug.	.....	2,854	677	1,181	152
Sept.	.....	4,517	1,378	682	3,335
Oct.	.....	19,506	2,853	886	2,840
Nov.	.....	6,361	6,140	1,189	3,925
Dec.	.....	9,710	4,799	14,897	8,990
Total	.....	106,105	44,763	63,295	64,475

*Revised.

Current car demand is slack. An eastern railroad has closed on 1000 kegs of spikes. Only about 3400 freight cars are actively pending at present.

Pittsburgh, June 3.—May tonnage in track material was slightly ahead of April's although recent specifications show little change from preceding several weeks. This also applies to demand from railroads for other steel products. Norfolk & Western is expected in the market shortly for 40,000 tons of rails with accompanying fastenings. Light rail demand remains slow with the price unsteady. Quotations on other materials are unchanged.

Chicago, June 3.—Moderately heavy grain movement is expected to benefit western railroads. Secondary buying of rails, however, is unlikely before another 30 days. Occasional miscellaneous rail tonnages are placed and track fastenings sales in the week just closed were close to 2500 tons. Illinois Central possibly will not place its 2300 freight and passenger cars for another ten days. Rail mill operations remain at slightly above 85 per cent.

CAR ORDERS PLACED

Canadian Pacific, 150 freight cars, to Canadian Car & Foundry Co.

Erie, ten gasoline-electric rail motor cars, to Bethlehem Steel Co.

Lehigh & Navigation Coal Co., seven air dump cars to Magor Car Corp.

LOCOMOTIVE ORDERS PLACED

Chilian State railways, four electric express passenger locomotives instead of three as noted last week, to Westinghouse Electric & Mfg. Co.

CAR ORDERS PENDING

United States navy, two box and two flat cars.

High Point, Thomasville & Denton, six flat cars and two caboose cars.

LOCOMOTIVE ORDERS PENDING

Inland Steel Co., one or two storage battery oil-electric locomotives.

Armstrong, Whitworth in New Iron Firm

London, May 22.—(*European Staff Service*)—A new offshoot of the Armstrong-Whitworth concern has been formed in England under the style of Sir W. G. Armstrong, Whitworth & Co. (Ironfounders) Ltd. This company has been formed for the purpose of taking over and operating the business of ironfounders and manufacturers of refined pig iron formerly carried on by Sir W. G. Armstrong, Whitworth & Co. (Engineers) Ltd. The capital of the company is £130,000, the whole of which is owned by the parent company, Armstrong Whitworth Securities Co. Ltd.

The plant and equipment of the foundry is capable of dealing with castings weighing up to 35 tons for all classes of general engineering work. It also produces Armstrong, Whitworth refined pig iron of guaranteed analyses.

Berkley Tool & Mfg. Co., Berkley, Mich., has changed its name to Ferndale Tool & Mfg. Co., and its place of business to Ferndale, Mich.

Wire

Buying Rate Shows Little Change and Prices Are Maintained—Jobber Activity Fair

WIRE and nail business maintains a steady volume and small change is seen from the April rate. Agricultural buying has slackened somewhat as field work claims attention. Nails are slow but prices are not affected. Jobbers are specifying well to build up stocks after spring activity. Manufacturers' wire is somewhat more active in number of orders, if not tonnage.

WIRE PRICES, PAGE 98

Pittsburgh, June 3.—Demand for wire products continues at about the May rate, which was off moderately from that of April. Shipments also declined last month. Producers report a steadier tone to prices and believe the market has touched bottom at current levels of $2.15 to jobbers for wire nails, 2.30c for bright plain wire and $36 for wire rods. Merchant products continue in light demand but manufacturers' wire is slightly more active from the standpoint of number of orders if not in tonnage involved.

Worcester, Mass., June 3.—Business in wire for May compared favorably with April. Production fails to show definite trends. Plain bright wire to dealers is being maintained at 2.40c, base, Worcester. Demand is moderate.

New York, June 3.—The $2.15, Pittsburgh, price on nails continues to be generally adhered to; also the 2.30c, Pittsburgh, price on wire. Trading in both products is light, however, with too little business to afford an adequate test. Sellers look for little early improvement.

Cleveland, June 3.—Some producers of wire, rods and wire products report tonnage booked and shipped so far this year well in advance of the 1929 rate. Day-to-day demands, however, remain limited, confined to actual requirements. Screw, nut, bolt and rivet manufacturers are fairly steady buyers but other consuming lines are poor. Jobbers are enjoying a fair turnover. Nails are $2.15 and wire 2.30c, Cleveland. Not much improvement in market conditions is expected before fall.

Detroit, June 3.—Manufacturing wire demand is somewhat lighter than in May, reflecting a moderate decline in automotive requirements. Nails are weak, both as to demand and price. Plain wire is usually 2.30c, Cleveland, with the Cleveland base of $2.15 on nails being undercut.

Chicago, June 3.—May shipments of wire products were slightly ahead of April and were approximately equal to May, 1929. Recent active dealer buying has subsided slightly, as farmers are active in field work. Dealer specifications are likely to be heavy until their stocks are rebuilt. Moderate buying of electrical wire is reported. No change is reported in farm wire products, annealed fence wire being quoted at 2.35c to 2.45c, and galvanized wire at 2.80c to 2.90c, Chicago or western mills.

Cold Finished Steel

Volume Trend Expected To Develop Decline—Automotive Needs Off

COLD FINISHED PRICES, PAGE 98

Cleveland, June 3.—Numerous consuming lines are represented in a small way on the books of cold-finished bar producers. Releases against these are limited, but 2.10c, Cleveland, continues the quoted figure. Automotive needs are but slightly larger.

Pittsburgh, June 3.—Incoming tonnage in cold-finished steel bars and shafting holds fairly well to the rate of the preceding several weeks. The outlook for early June is regarded as favorable but reduced shipments to the automotive industry are looked for this month as compared with May. Demand from the automotive industry still is spotty while requirements of other consumers are well distributed. The market remains steady at 2.10c.

Detroit, June 3.—Cold-finished bar specifications show a mild decline. Ford releases are extremely light. Buick and Chrysler demand is higher, while that from Chevrolet is steady. Other automotive consumers are taking more sparingly. Delivered prices are usually based on 2.00c, Cleveland.

Century Electric Co., St. Louis, E. S. Pillsbury, president, has increased its capital stock from $5,000,000 to $7,500,000.

Strip

Slow Demand Still Rules in Both Hot and Cold—Third Quarter Buying Slow

STRIP steel demand is lessening, though May showed a small gain over April at Pittsburgh. Expected lessened needs of automotive consumers promise smaller activity for June. The latter are almost the only inquirers for third quarter and mills have covered little for that delivery. Backlogs are not being accumulated. Production is unchanged at a low rate.

STRIP PRICES, PAGE 98

Pittsburgh, June 3.—Strip steel tonnage showed a slight gain during May over April while shipments were off moderately. Specifications showed little change during the past week but the outlook is for a decline in automotive demand before the end of June. Cold-rolled strip is slightly more active but continues well below demand for hot strip. Mill operations have been increased to 65 to 75 per cent, with cold strip output continuing 30 to 35 per cent. Third quarter inquiry so far is confined to automotive interests and little tonnage has been booked. The market is fairly steady on hot material at 1.70c and 1.80c, although the cold strip price is irregular with the market generally 2.45c to 2.55c.

New York, June 3.—Cold-rolled strip is easier at 2.50c to 2.55c, Pittsburgh. Hot strip, however, appears steady at 1.70c to 1.80c, Pittsburgh, for wide and 1.80c to 1.90c for narrow. Demand is light.

Philadelphia, June 3.—Hot-rolled steel strip continues at 1.70c and 1.80c, Pittsburgh, for wide and narrow, respectively, with occasional shading. Cold-rolled is quoted at 2.55c, Pittsburgh, and is weak. Strip sheet is generally 1.80c to 1.85c, Pittsburgh, for heavy gages, plus $3 for light gages.

Cleveland, June 3.—Strip steel orders again are shrinking. Producers are feeling the retarding effects of the recent week-end holiday. Specifications for hot strip are confined to a few carload of scattered 100-ton lots, with an occasional larger quantity, mostly from automotive and allied lines. These were taken at 1.70c and 1.80c, base, Pittsburgh, for wide and narrow, respectively. Cold is quoted 2.45c to 2.55c, Cleveland. No new inquiries have come up recently.

Chicago, June 3.—Weakness is being shown in hot-rolled strip quotations of 1.80c for wide and 1.90c, Chicago, for narrow strip. Hot mills are operating at about 60 per cent. Ford and Chevrolet releases comprise the chief automotive tonnage. Cold-rolled strip operations are less than 40 per cent. One producer is prepared to take third quarter tonnage at the prevailing market. Virtually no backlogs have developed. Cold-rolled prices are based on 2.45c to 2.55c, Pittsburgh-Cleveland.

Nonferrous Metals

New Business Is Light While Most Prices Hold Steady—Tin and Silver Fall to Low Levels—Copper Bookings Large

Prices of the Week, Cents a Pound

	Copper Electro delivered	Copper Lake delivered	Copper Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
May 28	13.00	13.10	12.70	31.25	31.50	5.50	5.40	4.62½	23.90	7.35	35.00
May 29	13.00	13.10	12.70	31.30	31.75	5.50	5.40	4.62½	23.90	7.27½	35.00
May 30—Holiday											
May 31—Holiday											
June 2	13.00	13.10	12.70	30.75	31.25	5.50	5.40	4.65	23.90	7.25	35.00
June 3	13.00	13.10	12.70	30.15	30.65	5.50	5.40	4.65	23.90	7.00	35.00

NEW YORK, June 3.—New business in all metals and metal products in the past week has been light. Some buying was done in lead, a little in export copper, but very little in domestic copper and in zinc and tin.

Tin fell to a new low price, and so did silver, but most of the other metals were remarkably steady. Actual consumption is going along at a steady pace, not showing much evidence of a change either up or down at any early time. The copper market is well booked for two months, but in all other metals it appears as if much buying remains to be done for June requirements.

Copper—Export sales of copper continued of good size until the holiday. Markets in Europe were closed about the same time as markets here. The lightness of new domestic business is a natural development after the thoroughness with which consumers recently covered their needs. The situation in mill products is similar to that in the unmanufactured metal, though it is probable that the coverage on products was not as complete as on bar and ingot copper. The price situation continues firm, though some small lots are offered in the outside market for resale a shade under 13.00c. The market expects May statistics to show a small reduction in stocks.

Zinc—Some prime western business has been done at 4.65c, East St. Louis, and producers refer to this price generally as the market. However, it has been possible to shade this price for prompt shipment. With concentrates at $31 a ton, smelters have little a better margin than formerly but this margin still is unusually narrow. The high grade market is quiet but continues 1 cent over prime western. Prime western zinc production is unusually low, and stocks of this grade are a smaller proportion of the total than for some months past, but with galvanizing in a weak market the situation is not favorable for a strong zinc market.

Tin—Buying has continued extremely light, with the result that prices have been forced below the 31-cent level, an extremely low figure. Visible supply in May increased 3176 tons to a record total of 39,771 tons. In addition to this, there is tin in stock at the Straits, at various other smelting points, and in unregistered warehouses here and in England. Production of tin may have been cut below the figure toward which it was tending, but it still appears to be fully as large as last year, while consumption here and in Europe is much less than last year.

Lead—Moderate business has been done lately for June shipment, but more recently business has been checked by the new fall in London prices. Prices are unchanged here.

Aluminum—New business is light, but consumption appears to be about the same as in other metals. Prices are unchanged.

Nickel—Business in nickel has held up well this year. Prices are firm and unchanged.—*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

Copper and brass product prices are based on 13.00c, delivered Connecticut, for copper

SHEETS	
Yellow brass (high)	19.75
Copper, hot rolled	22.75
Red brass (low) 80% cu.	21.12½
Best spring, drawing, spinning brass	22.50
Nickel silver, grade A, 18%	31.00
Lead, full sheets (cut ½c more)	9.25
Zinc sheet (100-pound base)	10.00
TUBES AND PIPES	
Seamless yellow brass (high)	24.75
Seamless copper	25.00
Seamless com. bronze, 90%	26.62½
Plumbing, I. P. sizes, yellow	23.75
Brazed brass, 75% cu.	27.25
RODS	
Yellow brass (high, full turnings)	18.00
Naval brass	20.87½
Com. bronze, 90%	22.62½
SHAPES	
Brass angles and channels	27.75
Com. bronze angles, channels	39.87½
ANODES	
Copper, in ovals	19.25
WIRE	
Yellow brass (high)	20.25

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	7.50 to 7.75
Chicago	8.00 to 8.50
Cleveland	8.50 to 9.00
St. Louis	7.50 to 8.00
HEAVY YELLOW BRASS	
Cleveland	5.75 to 6.00
HEAVY COPPER AND WIRE	
New York	9.00 to 9.50
Boston	9.50 to 10.00
Chicago	9.50 to 10.00
Cleveland	9.50 to 10.00
St. Louis	8.00 to 8.50
RED BRASS BORINGS	
New York	7.00 to 7.50
YELLOW BRASS TUBING	
Cleveland	5.75 to 6.00
LIGHT COPPER	
New York	7.50 to 8.00
Chicago	8.00 to 8.50
Cleveland	8.50 to 9.00
St. Louis	7.50 to 7.75
LIGHT BRASS	
Boston	4.50 to 4.75
Chicago	4.50 to 5.00
Cleveland	4.25 to 4.50
St. Louis	4.25 to 4.50
ZINC	
New York	2.00 to 2.50
Cleveland	2.00 to 2.25
St. Louis	2.00
ALUMINUM	
Clippings, soft, Cleveland	11.00 to 12.00
Clippings, hard, Cleveland	9.00 to 10.00
Borings, Cleveland	5.50 to 6.00
Cast, Cleveland	7.75 to 8.00
Cast, Boston	8.00 to 8.50
Cast, St. Louis	8.00

Secondary Metals

Remelt aluminum No. 12	15.50
Brass ingot, 85-5-5-5	11.75 to 12.00

Quicksilver Up, Quiet

New York, June 3.—Quicksilver is quiet at $120 to $122 a flask.

Coke By-Products

Less Distress Benzol Offered—Naphthalene Still Active—Toluol Unchanged

New York, June 3.—The benzol market is steadier with fewer distress lots offered. Demand is fair and while no great spurt followed the reduction of 1 cent a gallon in May, the market is in a much firmer position. Supply is much nearer demand. Prices hold at 21.00c in tank lots. Toluol is unchanged and moving in fair volume. Demand for solvent naphtha has increased slight-

(*Concluded on Page* 113)

Coke By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	$0.21
Toluol	0.35
Solvent naphtha	0.28
Commercial xylol	0.28

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.16 to 0.17

Per Pound at Producers' Plants

Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½

Per 100 Pounds Delivered

Sulphate of ammonia	$2.10 to $2.20

Warehouse

Cold-Rolled Cuts Are Formally Announced —Small Sales Prevail—Holidays Caused Drop in Orders—June Outlook Is Mixed

THE continued easing price situation has become manifest in cold-rolled base reductions at leading centers of from $1 to $8 a ton on quoted products. A fair movement of materials for outdoor construction seems to be evident but manufacturing is low and total volumes hold below the seasonal average. Price cuts may be possible at centers not joining in recent reductions, but showing an easy price trend. A sound situation is shown in good credit conditions of some sections.

Buffalo—Holiday shutdowns caused a sharp drop in sales. Improvement in construction conditions is expected to help June sales.

Boston—Small projects being carried out have resulted in more material being moved from warehouse. This has helped the situation generally, though prices have been shaded. The general situation is sound, disclosed in good collections.

Philadelphia—Jobbers report slow demand continuing. Prices are unchanged.

Pittsburgh—Activity remains sluggish, tonnage failing to show the expansion that had been looked for. Building operations require slightly more steel on some classes of construction. Prices continue easy but quotations generally are unchanged.

Cleveland—The movement of stock from local iron and steel warehouses continues in the light volume of recent weeks. Some quarters report bars in slightly better demand, while plates, wire and wire products are said to be slower. Since the recent cut in cold-rolled prices, some improvement has been noted in that line. Prices otherwise are unchanged and fairly firm.

Cincinnati—A reduction of 5 cents on cold-rolled steel in all sizes has been put into effect. Base price for rounds and hexagons is $3.80 and for shapes, $4.30. There is little change in volume.

Detroit—Cold-finished rounds and hexagons, squares and flats, have been reduced $4 per ton. The quality extra on S.A.E. 1020 has been lowered from 25 to 15 cents. Cold-rolled strip is off $8, to $5.40. Flat wire is down $6 per ton. Machine and carriage bolts and wrought washers have been reduced by an additional 10 per cent. Quantity extras on cold-finished steel are unchanged. May warehouse tonnage equalled April. The outlook for

(*Concluded on Page* 113)

Warehouse Quotations in Cents Per Pound at Leading Market Centers

Hot Mill Products Subject to New Quantity Differentials Adopted March 3, 400 to 3999 Pounds Being Base

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Houston	3.00c
Los Angeles	3.30c
New York††	3.25c
Philadelphia	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
New York††	3.25c
Philadelphia	2.80c
St. Louis	3.15c
Tulsa	3.65c

REINFORCING BARS

Baltimore	2.50c to 3.31c
Boston	2.665c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.30c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Houston	3.00c
Los Angeles cl.	2.40c
Los Angeles lcl.	2.70c
New York	2.65c to 3.10c
Philadelphia	2.50c to 3.00c
Pittsburgh	2.75c
San Francisco cl.	2.30c
San Francisco lcl.	2.60c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.65c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Houston	3.25c
Los Angeles	3.30c
New York	3.30c
Philadelphia	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland ¼ in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York	3.30c
Philadelphia	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c

NO. 10 BLUE ANNEALED

Baltimore	3.50c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Houston	3.90c
Los Angeles	3.85c
New York	3.40c to 3.50c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.25c to 3.35c
San Francisco	3.90c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.54½c
Tulsa	3.95c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c
Detroit	3.95c
Los Angeles	4.75c
New York	3.60c to 3.65c
Philadelphia*†	3.80c
Pittsburgh**	3.65c to 3.75c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.79c
Tulsa	4.45c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.40c to 4.60c
Chicago (local delivery)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.50c
Detroit	4.60c
Houston	5.40c
Los Angeles	5.20c
Pittsburgh**	4.30c
New York	4.25c to 4.50c
Philadelphia*†	4.25c
Pittsburgh**	4.40c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.58c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Houston	3.65c
Los Angeles	4.30c
New York	3.75c
Philadelphia	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York	4.25c
Philadelphia	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons	Flats squares
Baltimore (c)	3.30c	(a) 3.80c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chattanooga*	3.85c	4.35c(d)
Chicago	3.35c	3.85c
Cincinnati	3.80c	4.30c
Cleveland	3.40c	3.90c
Detroit	3.65c	4.15c
Los Angeles (a)	4.50c	.....
New York	3.50c	4.00c
Philadelphia*	3.40c	3.90c
Pittsburgh	3.60c	4.10c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	4.75c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.75c	5.14c

(a) Rounds only: (d) Squares only. *Plus quantity differentials.

COLD ROLLED STRIP

Boston, 0.100-inch 500 pounds lots	5.30c
Buffalo	5.85c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Cleveland (b)	5.95c
Detroit	3.65c 4.15c
New York	5.05c
Philadelphia (c)	5.05c

(b) Net base, straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	12.50c
Iron bars, round	6.25c
Iron bars, flats and squares	6.50c

††Domestic bars. **Less than 25 sheets. *†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Pacific Coast

Dull Conditions Hold Back Activity—Lower Freight Rates Give Competition

BUILDING offers the best outlet for iron and steel products, low prices of materials being a cause of construction activity. Reduction of freight rates from inland steelmakers is a matter of interest in its possibilities for competition. Small lots rule in present buying and prompt delivery is a factor. Prices are fairly steady in most products.

Seattle, May 28.—While general business conditions in the Pacific Northwest are below normal, construction continues active, due largely to low prices of materials. This is particularly true of cement and lumber while steel is also quoted at attractive figures.

The trade is interested in a reduction of 4 cents per 100 pounds on iron and steel originating in Illinois, Indiana, Ohio and Kentucky for shipment via Mobile and New Orleans. This adjustment was made to place the middle states on a rate parity with freights between the Pittsburgh territory and Atlantic ports. The basic water rate remains at 30 cents from both north of Hatteras and Gulf ports, so that both sections are on an equal freight footing.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Local plants are busy figuring on the Aurora bridge, Seattle, involving 7500 tons of structural and 1500 tons of reinforcing, bids for which will be opened next month. Mill prices are unchanged with shapes and merchant bars 2.35c, reinforcing, 2.30c and plates stronger at the new minimum of 2.25c. Imported steel seems to be of little consequence in the local market.

The two Seattle steel mills report unchanged operations with a fair tonnage of reinforcing business in hand, most of it in car lots. Pacific Coast Steel Co. booked a small order for the new Kress building, Seattle.

Birchfield Boiler Works booked 100 tons of plate for 1395 feet of 24-inch steel pipe for the Beacon Hill job, Seattle. Steel Tank & Pipe Co. was low bidder at $85,648 for 10,898 feet of 58-inch steel pipe for the Lake Cushman project, Tacoma. J. E. Bonnell & Sons, Tacoma, were low bidders at $235,765 for construction of Cushman powerhouse No. 2.

Structural awards this week totaled 170 tons, of which Wallace Bridge & Structural Steel Co. took 100 tons for a state highway bridge at Teanaway, Kittitas county. Isaacson Iron Works booked 70 tons for the Kress building, Seattle. Several smaller jobs have been taken by local shops. Bids have been invited for 1800 tons for the Meier & Frank store addition, Portland. J. J. Badraun, Portland, was low bidder at $53,748 for two steel bridges in Adams county, Idaho. Bids for two bridge jobs in Oregon are under consideration by the state commission. Coos county, Oregon, has voted a bond issue of $300,000 for a bascule type bridge over Isthmus inlet, plans for which have been completed by the state highway department. Bids for four transmission towers for Seattle, have been rejected. Tonnage involved is 100. Star Iron Works booked a small tonnage involved in several steel towers for Tacoma's Lake Cushman project.

Finished Materials

Business is spotty with wholesale jobbers but the month's total has been fair, although the volume is less than in May, 1929. Sheets are moving in larger quantity while there is a good demand for light plates for tank and boiler jobs. Price schedules are unchanged.

Pipe Inquiry Is Less

Inquiry has fallen off and no important pipe projects are pending, municipal requirements having been covered in recent contracts. Portland is calling for bids for a quantity of galvanized pipe and fittings. Kennydale, Wash., will open bids June 10 for a water system to include a 50,000-gallon tank and nine miles of two to 8-inch pipe, either steel or wood.

Old Materials

The market for scrap is unchanged. Local mills are receiving an improved grade of steel scrap, shipments exceeding present consumption. Prices remain at $10 to $11, gross, f.o.b. mill. Exporters are not buying at present, Japan demand having dropped. Cast iron scrap is weak at $12.50, net, and buying is listless and in small lots.

Most Tonnages Are Small

San Francisco, May 31.—(*By Air Mail*) — Although numerous small awards of lots of less than 100 tons were placed few important tonnages were booked. Prices are firm at recently established levels.

Pig Iron and Coke

Little improvement in demand is noted, most sales and inquiries calling for small lots. Prices remain unchanged.

Bars, Plates and Shapes

Concrete bar awards totaled 528 tons and included 124 tons for Los Angeles, placed with the Los Angeles Iron & Steel Co., and 124 tons for highway work in Humboldt county, Calif., booked by an unnamed company. Bids have been opened on 350 tons for a bridge over the Salinas river, Monterey county, Calif. Los Angeles will open bids June 25 for 415 tons for the Washington street bridge. Out-of-stock prices in the Los Angeles district remain unchanged at 2.40c, base, on carload lots, while San Francisco district prices are firm at 2.30c, base. Merchant bar steel holds at 2.35c, c.i.f., with movement confined to relatively unimportant lots. Plate prices are now firm at 2.25c, c.i.f.

Few structural awards were noted, the aggregate being less than 400 tons. Bids will be called for shortly for over 2000 tons for the new Ford plant at Richmond, Calif. Plain material is firm at 2.35c, c.i.f.

Other Finished Material

The only cast iron pipe award in excess of 100 tons went to the Pacific States Cast Iron Pipe Co. and called for 400 tons for Shoshone, Idaho. Bids will be opened June 9 for 384 tons for San Diego and on 350 tons for Santa Ana, Calif. Los Angeles will open bids June 23 for 657 tons for the improvement of Manchester avenue. Fullerton will open bids June 17 for 831 tons and June 3 for 110 tons. Demand for standard steel pipe continues light, stocks in distributors' warehouses being well rounded out. Little activity is noted in demand for oil country goods and line pipe.

Coal Washing Benefits Described by Expert

Benefits to be derived from washing or otherwise cleaning coal to be used as coke have been investigated by the bureau of mines, Washington, and the results summarized in a paper delivered before the American Gas association, which met at Cleveland, May 23, entitled "Influence of Washing Coal on Coke Properties and on Gas and By-Product Yields," by A. C. Fieldner, chief engineer. The paper is a composite of the results reported in engineering literature, and the opinions of consulting engineers, coke-oven superintendents and others interested in the subject.

The conclusions derived were that in considering the use of washed coal, the gas or coke plant operator is concerned with two classes of effects, namely, those due to the removal of free mineral constituents such as slate, shale, bone and pyrite and those due to the surface moisture left in the coal from the washery. All of the first class are desirable as they improve the quality of the carbonization products. The second class of effects, those due to moisture, are complex, partly desirable, but mostly undesirable, especially with a material increase of moisture in the coal.

Amalgamated Conference Leads to Dispute

Atlantic City, N. J., June 3.—Considerable discussion has developed at the wage conference here which began a week ago between representatives of the Western Sheet and Tin Plate Manufacturers' association, headed by Secretary Elias Jenkins of Youngstown, O., and the sheet and tin plate wage committee of the Amalgamated Association of Iron, Steel and Tin Workers, headed by President M. F. Tighe. A bombshell was thrown into the otherwise placid gathering in the form of the wages to be paid pack furnace workmen.

The Amalgamated representatives last week presented their demands on the independent sheet manufacturers, as noted in the May 29 issue of IRON TRADE REVIEW. The following day the manufacturers' representatives presented their demands on the men. And among these were the wages to be paid on pack furnaces. As one of the manufacturers puts the case:

"This question of pack furnace wages had to come up some time and it may just as well be settled now as any other time. The growing competition between sheets and wide strip is becoming so keen that every angle of costs in their manufacture is going through the closest scrutiny of the employers. This pack furnace wage may lead to an interesting situation before a settlement is arrived at."

Up until this afternoon the conferees were said to be meeting in an endeavor to effect a settlement of their differences.

Reading Adds Sizes

Reading Iron Co., Reading, Pa., which heretofore manufactured puddled wrought iron pipe in sizes from ⅛ to 20 inches in diameter, announces that it has increased its range to include 22-inch and 24-inch sizes. The addition of these sizes is seen to open a wide field for the Reading company's products in the natural gas industry and in large high pressure power plants.

Warehouse

(*Concluded from Page* 111)

June is mixed, but automotive production may sink slightly.

New York—June opens with jobbing demand quiet and prices unchanged. May's volumes were comparable to April's, some leading sellers reporting a slight gain in last month's business.

Chicago—Western warehouses are quoting reductions of 25 cents, base, per 100 pounds, on cold-rolled steel shafting in all sizes. Rounds and hexagons now are $3.35 base, f.o.b. Chicago, instead of $3.60, while cold-rolled square and flats are $3.85 instead of $4.10. Mild cold-rolled strip has been reduced to $6.15 and hard cold strip is now quotable at $5.70 out of warehouse. Despite low inventories and substantial credit conditions, warehouse sales fail to pick up. May orders barely held their own with April.

St. Louis—Country garage and machine shop demand has offset railroad buying which is at low ebb. Farm implement makers' requirements have receded. Galvanized materials, sheets and tank plates continue quiet. Quotable prices remain steady, their trend being easier, however. All volumes still are below the seasonal average of several years. Highway programs will be larger.

Coke By-Products

(*Concluded from Page* 110)

ly. Distributors are holding closer to quoted figures. Commercial xylol is unchanged. Phenol buying is not heavy. Sellers admit they could take more business. A fair volume is moving against contracts, but inquiry and buying is below last year. Prices are more unsteady. Naphthalene continues active. Prices are firm. Shipments are heavy and some spot business is noted. Sulphate of ammonia is moving steadily to the fertilizer trade in bulk, but some recession is reported by a few sellers following a spurt in buying which started late. Some shading is reported on available lots for export.

Operating Rates

June Opens With Ingot Output on Downward Course—Centers Slump

Cleveland—Ingot output for the first week of June shows a marked slump when, with 24 of 34 open-hearth furnaces on, the average for the district stands at 70 per cent. A drop of nine points is thus registered from last week and the rate is the lowest since the first week in March. Corrigan, McKinney Steel Co. has only eight of 14 steelworks furnaces pouring.

Youngstown, O.—Operations continue at 65 per cent of capacity. Of the 51 independent open-hearth furnaces, 28 are melting steel. Corporation steel output is unchanged at 65 to 70 per cent. Seventy of 120 sheet mills are scheduled and but few of the mills will operate full turns. Strip and tin plate capacity is 70 per cent engaged. Pipe continues at 65, with an increase indicated for the near future. Independent bar mills are at 60 and those of the Corporation at 70. Carnegie Steel Co. has blown in a stack at its Ohio Works, making four of six blast furnaces in operation and 19 of the district's 34 stacks blowing, making pig iron capacity at 63 per cent.

Birmingham, Ala. — With exception of blast and open-hearth furnaces, operations are showing a slight easing off. Seventeen blast furnaces are making iron, mostly basic, while 19 open-hearth furnaces are still on ingot. Steel finishing mills are not as active as heretofore and some of the iron melting shops are slightly off also. Expectations are bright for immediate improved conditions.

Pittsburgh—Steelmaking is tending downward, averaging slightly above 70 per cent. The leading interest has made no change in the net number of active blast furnaces for the third consecutive month. Sheet production is lower at 65 per cent, with tin plate off at 75 to 80. Strip schedules are higher at 65 to 75, with pipe mill output up to 60.

Chicago—Ingot output is slightly above 80 per cent. Finishing mill operations range from 70 to 80 per cent, except rail mill activity, which is 85 or higher. Twenty-five of the 36 steelworks blast furnaces are blowing.

Buffalo—Steelworks are operating at 73 per cent following the usual holiday suspensions. Operations at Bethlehem's Lackawanna plant are said to be in excess of 85 per cent but low rates in other plants reduce this average. There were 27 open hearths making steel this week.

Pig Iron

(*Concluded from Page* 99)

fluence. A Dayton, O., melter is inquiring for 1000 tons of northern iron.

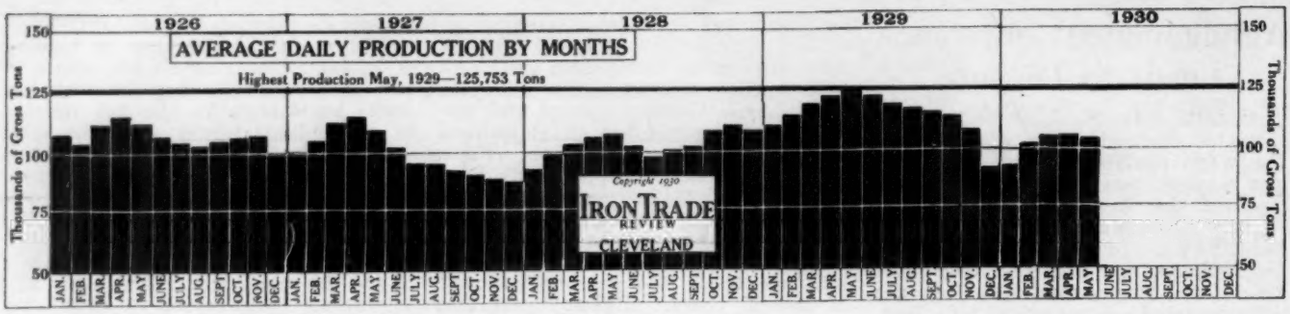
Chicago, June 3.—Merchant furnace interests are shipping the equivalent of the output of four South Chicago merchant stacks. Several buyers with contracts expiring early this month have underestimated their needs and are in the spot market. All six merchant furnaces in the district now are active. Silvery iron prices on grades from 6 per cent up are off about $1 a ton. A range of $23.04 to $27.04, delivered Chicago, is being shown in Lake Superior charcoal iron. Sales of southern iron in this market at $12.50, base, Alabama furnace, have established a delivered price of $18.51.

The bulk of eastern iron moved by boat to this market is selling on docks at $18.50, base, but $18 still is being done. A Chicago merchant producer has reduced its price 50 cents to $18.50 to $19, base, furnace An implement maker north of here is expected to be in the market soon for July requirements, probably 1000 to 1200 tons.

St. Louis, June 3.—Holiday interruptions held down the total of pig iron sales in this district in the past week to 1200 tons. A specialty manufacturer is inquiring for 2500 tons of high silicon iron for third quarter. Consumption of iron in this district in May was less than in April. Prices are steady to firm.

Birmingham, Ala., June 3.—Sales of pig iron again are being made by Alabama producers in the Baltimore, Philadelphia and northern Illinois districts. Orders generally are for small lots. Surplus stocks were reduced during the past month. Inquiries for third quarter are scarce. The price for local and nearby delivery continues $14, base, furnace, lower figures being quoted for outside shipment.

Toronto, Ont., June 3.—Merchant pig iron sales improved during the past week, on orders for small lots. Inquiries indicate larger buying for third quarter soon. Prices are unchanged.



Iron Rate Off Moderately in May

AFTER increasing for four months, beginning with January, the daily rate of pig iron production turned downward in May. At 104,509 gross tons, the daily rate of May showed a 1.8 per cent decline from the revised rate of 106,371 tons in April. Compared with the 125,753 tons of last May a sharp recession is shown, but when contrasted with the 106,219 tons of May, 1928, a more normal situation is revealed.

The May total of coke pig iron was 3,239,772 tons, a slight increase, because of the longer month, over the 3,191,119 tons of April. In the first five months of this year 15,368,401 gross tons of pig iron were made, compared with 17,922,433 tons in the like period of 1929 and 15,428,123 tons in 1928.

May production included 616,055 tons of merchant iron, 2,623,717 tons of nonmerchant and 38,279 tons of spiegeleisen and ferromanganese. The 5-month total for merchant iron is 3,019,695 tons, for nonmerchant iron 12,348,605 tons and for the alloys 175,484 tons.

At the close of May 179 blast furnaces, three fewer than at the close of April, were active. One merchant stack—an Iroquois of Youngstown Sheet & Tube Co.—was lighted in May, while the stack of the Tennessee Products Co. at Rockdale, Tenn., was blown out. Four steelworks stacks were lighted and seven were blown out.The Bethlehem Steel Co. dropped one stack each at Sparrows Point, Md., and Bethlehem, Pa. The Republic Steel Corp. blew one out at Massillon, O., the Colorado Fuel & Iron Co. one at Minnequa, Colo., the Illinois Steel Co. two at Gary, and the Carnegie Steel Co. one at Edgar Thomson works. Steelworks stacks lighted in May included one each by the Otis Steel Co., Cleveland, Illinois Steel Co. at Gary, Carnegie Steel Co. at Youngstown, O., and National Tube Co. at Lorain, O.

MONTHLY PRODUCTION

	1930	1929	1928	1927
Jan.	2,838,751	3,433,028	2,855,515	3,101,346
Feb.	2,845,937	3,218,376	2,898,668	2,940,604
Mar.	3,252,822	3,709,518	3,199,175	3,482,107
April	3,191,119	3,663,167	3,181,975	3,424,377
May	3,239,772	3,898,344	3,292,790	3,391,067
Total 5 mos.)	15,368,401	17,922,433	15,428,123	16,339,501
June	3,715,104	3,082,340	3,089,726	
July	3,782,511	3,072,711	2,954,625	
Aug.	3,746,198	3,136,995	2,950,674	
Sept.	3,496,454	3,063,593	2,782,500	
Oct.	3,588,146	3,373,539	2,812,015	
Nov.	3,182,420	3,304,656	2,661,863	
Dec.	2,836,917	3,369,784	2,698,208	
Total	42,270,183	37,831,741	36,289,112	

RATE OF OPERATION

(Relation of Production to Capacity)

	1930†	1929*	1928‡
January	65.0	79.0	66.8
February	72.1	82.2	72.5
March	74.5	85.5	74.8
April	75.4	87.4	76.8
May	74.2	89.8	77.0
June	.....	88.5	74.4
July	.....	87.2	71.8
August	.....	86.4	73.3
September	.....	83.3	74.1
October	.....	82.6	78.9
November	.....	75.8	79.8
December	.....	65.5	78.8

†Based on capacity of 51,490,790 tons as of Dec. 31, 1929. *Based on capacity of 51,069,895 tons. ‡Based on capacity of 50,329,750 tons. Capacities computed by American Iron and Steel institute.

AVERAGE DAILY PRODUCTION

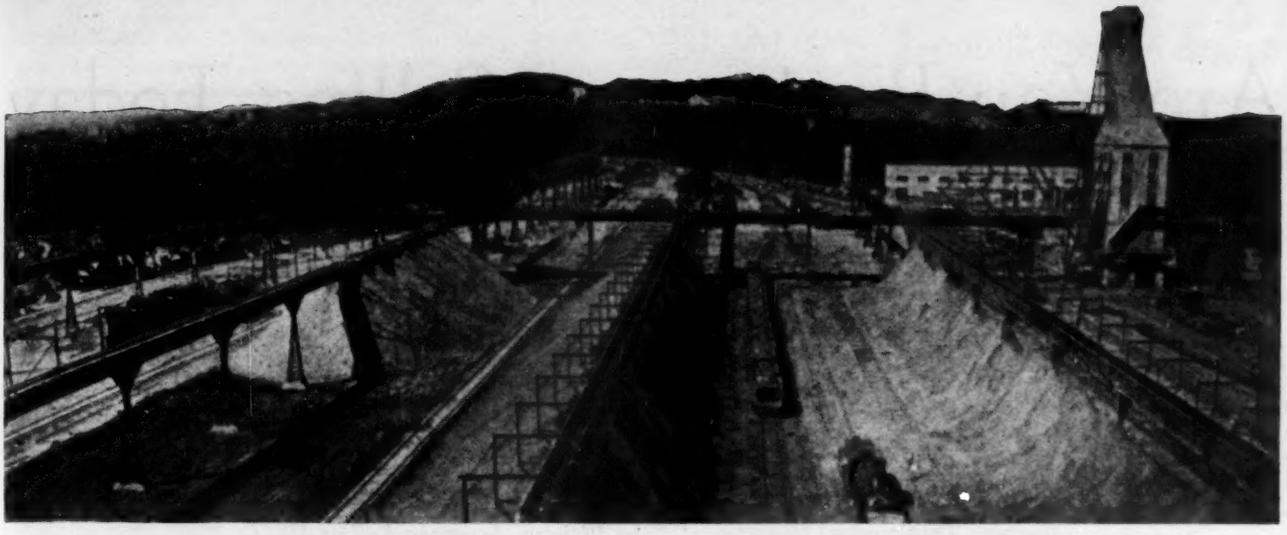
	1930	1929	1928	1927	1926
Jan.	91,573	110,742	92,113	100,043	107,039
Feb.	101,640	114,942	99,954	105,021	104,423
Mar.	104,930	119,662	103,199	112,326	111,554
Apr.	106,371	122,106	106,066	114,146	114,627
May	104,509	125,753	106,219	109,388	112,187
June	123,837	102,745	102,991	107,749	
July	122,016	99,120	95,311	104,021	
Aug.	120,845	101,193	95,183	103,249	
Sept.	116,548	102,120	92,750	105,442	
Oct.	115,747	108,824	90,710	107,555	
Nov.	106,081	110,155	88,728	107,933	
Dec.	91,513	108,702	87,039	99,651	
Ave.	101,777	115,808	103,365	99,422	107,126

DIVISION OF PRODUCTION

1929	Merchant	Non-merchant	Spiegel and ferro manganese
Jan.	744,448	2,688,580	37,210
Feb.	665,648	2,552,728	34,419
Mar.	740,966	2,968,552	37,997
Apr.	740,311	2,922,856	44,406
May	772,014	3,126,330	35,598
Total (5 mos.)	3,663,387	14,259,046	189,630
June	716,715	2,998,389	43,218
July	741,622	3,040,889	41,137
Aug.	682,048	3,064,150	40,527
Sept.	643,197	2,853,257	38,038
Oct.	739,060	2,849,086	39,640
Nov.	737,591	2,444,329	37,328
Dec.	661,343	2,175,574	40,375
Total	8,584,963	33,685,220	469,893
1930			
Jan.	612,406	2,226,345	32,761
Feb.	535,844	2,310,093	26,204
Mar.	641,969	2,610,853	37,387
April	613,421	2,577,698	137,205
May	616,055	2,623,717	38,279
5 mos.	3,019,695	12,348,605	175,484

MAY PIG IRON PRODUCTION

	No. in blast last day of month		Total tonnage made		—Totals—	
	May	April	merchant	nonmerchant	May	April
Ohio	40	38	108,767	597,626	706,393	678,484
Pennsylvania	58	60	106,394	881,759	988,153	993,896
Alabama	17	17	119,184	121,348	240,532	239,895
New York	13	13	107,464	93,104	200,568	210,825
Illinois	18	17	104,100	254,479	358,579	337,936
Colorado	2	3				
Indiana	14	15				
Maryland	4	5	8,382	490,375	498,757	492,775
Virginia	1	1				
Wisconsin	0	0				
Kentucky	1	1				
Massachusetts	1	1				
Tennessee	0	1	15,163	101,520	116,683	110,347
Utah	1	1				
West Virginia	3	3				
Michigan	4	4				
Minnesota	2	2				
Missouri	0	0	38,506	53,322	91,828	86,058
New Jersey	0	0				
Spiegel and ferro—all states			8,095	30,184	38,279	40,903
Total	179	182	616,055	2,623,717	3,239,772	3,191,119



Montreal mine, Gogebic range, principal property operated by Oglebay, Norton & Co. This is one of the largest underground iron mines in the world. A mile-long trestle gives it stocking capacity for 600,000 tons of ore

Cleveland-Cliffs Extends Influence by Oglebay, Norton Affiliation

CLEVELAND-CLIFFS IRON CO. has extended its influence over Lake Superior iron ore reserves by an affiliation with Oglebay, Norton & Co., Cleveland, iron mine operators, effective June 1.

The transaction was brought about by the fact several individuals having a large financial interest in Cleveland-Cliffs also have substantial interests in mines operated by Oglebay, Norton. They wanted to bring them closer together. Details have not been divulged, but Cleveland-Cliffs as a corporation has acquired an important financial interest in the Oglebay, Norton company.

Oglebay, Norton is primarily an operating company, and except through personal connections, does not own the mines it operates under contract. Cleveland-Cliffs as a corporation has not acquired a financial interest in these mines, aside from the interest previously held by individuals identified with it.

Oglebay, Norton are the largest merchant iron ore producers heretofore unassociated with iron and steel companies. Only three or four small all-merchant ore shippers now remain in the field. First, in point of shipments, is the United States Steel Corp.; next Pickands, Mather & Co.; M. A. Hanna Co.; Cleveland-Cliffs; Jones & Laughlin Steel Corp., and Oglebay, Norton.

Oglebay, Norton does not own Columbia Steamship Co., which operates ten Great Lakes ore and coal vessels. Stockholders in Oglebay, Norton, however, do hold stock of the vessel company. Details of how the Columbia company will be associated with Cleveland-Cliff's 24 vessels remain to be worked out. Naturally, the steamship company will work with its associated iron ore interests. The combination of the two fleets with 34 vessels would constitute the third largest ore and coal fleet on the lakes. Incidentally, prospects of a merger of all independent fleets on the Great Lakes appear more remote.

Oglebay, Norton shipped 2,800,000 tons of iron ore in 1929, one-half of which came from the Montreal mine. The mine is one of the largest underground properties in the world, and is situated on the Gogebic range. Other mines on this range operated by Oglebay, Norton are the Eureka-Asteroid, and Castile-Meteor.

The affiliation, therefore, gives Cleveland-Cliffs an influence over high-grade ore properties of the Gogebic ranges which it lacked heretofore. It also extends its interests to the Menominee range, where Oglebay, Norton operate the Bristol, Berkshire and the new Brule mines. Two other Menominee mines, Fortune Lake and Commonwealth, remain inactive.

On the Mesabi range Oglebay, Norton operate the Greenway, a new mine expected to ship ore this year, and are agents for the St.-James-Miller and Mohawk, old mines, not now operating. Cleveland-Cliffs iron ore interests have been centered largely on the Marquette range, with a few important holdings on the Mesabi.

The affiliation gives Cleveland-Cliffs close contact with the Oglebay, Norton mining organization, known as one of the "livest" on the ranges. Another important feature is the fact Oglebay, Norton are operators of a large fluorspar mine in southern Illinois, important to the steel interests associated with Cleveland-Cliffs. It has agencies for ferromanganese and also through a subsidiary for zinc mines.

The joint statement issued by Cleveland-Cliffs and Oglebay, Norton says the transaction recognizes "a relation which has existed for many years," and "the business will continue to be operated in the future precisely as in the past. The affiliation brings about a situation whereby each of the two companies is helpful to the other." Officers remain unchanged.

Cleveland-Cliffs is an outgrowth of the Cleveland Iron Mining Co., which started on the Marquette range in 1850. It was organized by a few men including Samuel L. Mather, father of W. G. Mather, president of Cleveland-Cliffs. Oglebay, Norton is the successor of a business started by one of the pioneers of Cleveland-Cliffs, Henry B. Tuttle, who was secretary of the Cleveland Iron Mining Co. before starting in business for himself as Tuttle & Co., which developed into Oglebay, Norton & Co.

Are You Buying and Selling Today for Your Future Success?

Short Sighted Policies May Turn Gains Into Losses—Temporary Advantages Leads to Lower Quality and Service and Unsettled Markets

By D. M. Strickland

Manager, Development Department, Sales Division, American Rolling Mill Co.

ANY present day business will not have a chance to become a future business unless it is properly organized, managed and extends to the public a profitable service. We are all in business to make money. We do this by buying something, doing something with what we have bought and selling what we have done. Profits can accrue from these three functions providing we buy right, do right and sell right.

Such are three important divisions of business and each should contribute its fair share of profit to the enterprise. Buying right, doing right and selling right must be done in such a manner today that they perpetuate themselves and thus make it possible for these three phases to continue to yield profits over long periods of time in the future.

Today's Buying Affects Future

What may seem to be right buying today may in reality be jeopardizing future business. We may buy so "completely right" that we take away the opportunity to buy profitably in the future. We may demand such great price concessions, credit concessions and other concessions that our business becomes unprofitable to those who serve us. Consequently the next time we buy we may find it impossible to secure the same goods.

As a result our future buying may be at a loss to our business rather than at a profit. We may still wish to do business with quality merchandise but find we have hurt our own business by eliminating from the market, due to sharp practices, merchandise which we need to perpetuate a quality business in future years.

In our doing right today, what steps are we taking to be sure that when a five year period rolls around we will still be doing right? Are we devoting a certain amount of time and effort to study in our trade? Are we taking pains to keep up with new developments pertaining to the proper execution of our services? Are we spending time and money to be sure that our "doing" in future years will be an improvement on the "doing" of today?

There is no business of consequence today, radio, ironmaking, medicine or sheet metal contracting, which is not doing things differently than it did five years ago. This is proof that five years from now things will be done differently than they are at present. Hence, does our "best" of today include that necessary energy needed to perpetuate this "right doing" over future profitable years.

And, are we selling for the future or are we selling for immediate present profit? Are we stealing our future selling profits by sharp practices of today? Are we taking orders for work at prices which we know cannot be maintained on a money making basis? If so, we are jeopardizing the profitableness of our future business.

Every sale that is made should produce a present day monetary return, and at the same time carry protection toward future business so that our activities of the future can likewise yield a fair return on our educational and dollar investments.

Links Must Be Correlated

In thinking of our future business let us go through the mental process of organizing a business. Whether it is large or small there are many links which must be correlated. There is a purchasing link; the investment link; the equipment link and the link of research. And there are other links. All of them represent vital parts of our business.

Each link must have its full share of attention and be organized properly either as a department in the case of a big business or receive its full share of time if it is necessary that one man handle more than one activity. However, these various links can either be contributory supporters of the business as a whole or they can, if uncorrelated pull in all directions. What they need in a well organized business is a link of management.

All of the smaller links must be securely fastened to the link of man-

Sharp Buying Practices React Adversely

TEMPORARY advantage seldom pays in buying or in selling. Sharp buying practice tends to react against the buyer in several ways; through lowered quality of the material or service and unsettled markets. A shortsighted buying policy generally leads to a ruinous sales policy. That is why some buyers, especially those using raw or semifinished materials such as iron and steel insist that their sources of supply make reasonable efforts to maintain prices on a stable basis. Sound practice looks beyond the expediencies of today and considers the future, as pointed out in the accompanying article. The article is an abstract of an address by D. M. Strickland, manager, development department, sales division, American Rolling Mill Co., Middletown, O., before the Ohio Sheet Metal Contractors association in Toledo, O., recently. The principles he emphasizes have a wide application.

agement and the management link is the most important in the entire development of business. Each day should contain its full quota of time set aside for a study of management responsibilities. This means active thinking. It requires pioneer thinking to be a manager. It requires the type of mind which is looking ahead.

Let us say we now have a business organized with a sound management link at the top and under its direction several smaller links. Up to this point in our planning we have been thinking in terms of *our* business, or *my* business.

We must now go a step farther. We must forget the *my* part of the business and think of the *customer* part. We must join our link of management and other links to the general public. Our business will not show a profit unless it affords a profitable service to the community in which it is placed. It makes no difference whether the community is a small one or a nation-wide market; the principle is the same.

Sales Link Is Necessary

We must have a sales link. This may be a department of salesmen, a salesroom or whatever facilities are customarily used when joining the business to the public. It is a task of interpretation. It is YOUR responsibility to take your products and services and so translate them into your customer's terms that the buyer recognizes a real service is available which warrants his support with legitimate profit to the seller.

It is a responsibility of the selling link of your business to study the requirements of the public and to recognize that the public has the biggest of all influences on your business. This does not mean that you should not introduce new articles, new merchandise, new services. Quite the contrary. But it does mean that when you *do*, you must be sure that at the proper time and place your own sales link is aggressively interpreting your service to the public.

This is a day of public enlightment. Advertising pages and editorial columns are full of explanation. The day of secrecy with its misunderstandings and suspicions is past. Future businesses must interpret themselves fully to the public. Only then can the public recognize proper standards and be able to judge the value received for the money it spends.

We have now organized our business with three principal divisions: Management, departmental activities and selling. However, no matter how carefully we may have considered these problems, it is self-evident that each individual business enterprise can never be any greater than combined activities of all the members of the organization. There are three kinds of people available for your business; pullers who are pulling the business forward in a profitable manner; riders who are simply floating along, and laggers who are holding back the business. Your future business will be profitable when the aggregate effort of the pullers, riders and retarders is in favor of progress.

Management Link Leads

Think of your business with its management link at the top and geared to the public with a link of interpretive selling. Now the question is: "To what is our link of management connected?"

Whether you like it or not, every single individual engaged in your line of business will have an influence on the profits of your privately owned enterprise. And just as in any industrial organization the total accomplishment is the sum of the accomplishments of the men in its organization, so the national standing of your profession is the sum of the standings of all those engaged in it. And here you will find there are pullers, riders and retarders.

Are you a retarder in your business? If not, what are you going to do with those who are retarders? If your competitor is a poor element in the business is it to your advantage to push him backward when the farther down you push him the worse it is for the profession as a whole? Isn't it true that whether such a competitor realizes it or not, the more you can do to help him become a puller, by that much you strengthen the profession of which you are a part?

Isn't this a challenge for merged effort to answer? What individual can carry forward such a vision as this alone? It will take all the pullers in the business, shoulder to shoulder, propelling a program of research, establishing standards and performance, and safeguarding the ethics in your profession. Join your link of management to the management links of the thousands of other members of a constructive association and your future business will be stabilized and profitable.

Gastonia Roller, Flyers & Spindle Co. has been formed of the Lowry Bros. Textile Machine Works, Gastonia, N. C., and the Textile Spindle & Flyer Co., Charlotte, N. C., to engage in repair work on steel rollers and other textile mill equipment.

Republic Steel's Common Stock on $4 Basis

Youngstown, O., June 3.—Directors of the Republic Steel Corp. have declared an initial dividend of $1 a share on common stock for the quarter ended July 31, thus placing the issue on an annual basis of $4 a share and maintaining the rate paid on the old Republic Iron & Steel Co. shares

Directors also declared a dividend of 24 cents a share on common for the period from April 8 to April 30. The common dividends are payable Aug. 1 to holders of record of July 12. Quarterly dividend of $1.50 a share was also declared on preferred, payable July 1 to holders of record June 12.

Attack Canadian Tariff

Toronto, Ont., June 3.—Conservative members of the Canadian house of commons, when the higher iron and steel schedules of the revised tariff were under consideration May 27, attacked the proposed rates as inadequate to afford needed protection to the Canadian industry. Progressive and labor members demanded that tariff revision be made provisional upon better working conditions in steelworks.

Consider Foundry Costs

New England foundrymen meeting in Worcester, Mass., last week perfected organization of a foundry cost group. Charles H. Klaus, cost expert of the Newark Foundry council, was assigned to study foundries associated with that group and determine cost schedules. The meeting was addressed by Mr. Klaus and John A. Mitchell, assistant general manager of the Gray Iron institute. Representatives were present from Boston, Providence, Bridgewater, Milford, Walpole, Gardner, Fitchburg and Newburyport.

Addresses Constructors

W. C. Gilbert, general manager, Dorman Long & Co. Ltd., London, was guest of members of the American Institute of Steel Construction at a luncheon at the Engineers' club, West Fortieth street, New York, May 29. Mr. Gilbert paid tribute to the ingenuity of the American structural engineers and to the work being conducted by the American Institute of Steel Construction, expressing special interest in the battledeck type of flooring now being used in some buildings in this country.

Industrial Men in the Day's News

James Aston, Robert Woolston Hunt Medalist, 1930

UNIVERSITIES of Wisconsin, Cincinnati, Washington and Pittsburgh, as well as United States bureau of mines, provided him the setting for his investigations.

THESE researches culminated in his greatest achievement, i.e., the mechanical puddling of wrought iron.

HIS successful efforts at the A. M. Byers Co. plant at Warren, O., led to erection of a $10,000,000 plant at Ambridge, Pa.

IT IS not often a man's researches lead to an investment of $10,000,000 by his company in a building program for the manufacture and exploitation of the product resulting from his investigations. Yet this is exactly what has happened in connection with James Aston, who, as noted in IRON TRADE REVIEW of Feb. 27, was awarded the 1930 Robert Woolston Hunt medal by the American Institute of Mining and Metallurgical Engineers at its annual meeting in New York, Feb. 17-21. This honor was conferred upon him for his paper on "A New Development in Wrought Iron Manufacture," presented before the iron and steel division meeting of that organization in Cleveland last September. The Hunt medal is one of the most prized awards in the iron and steel industry and has been presented only three times previously in ten years. The Aston process of wrought iron manufacture was described in IRON TRADE REVIEW of Feb. 7, 1929.

The new plant of the A. M. Byers Co., Pittsburgh, with which interest Dr. Aston is identified as consulting metallurgist, is being completed at Ambridge, Pa., where operations are being concentrated. The Warren, O., plant where Professor Aston developed his process has been abandoned.

Research work conducted by Dr. Aston at four well known institutions of learning as well as at the United States bureau of mines, Pittsburgh, has given him a wide and varied knowledge of things metallurgical. At present he is director of the department of mining and metallurgy of Carnegie Institute of Technology, Pittsburgh.

Dr. Aston was born in England in 1876 but early removed to this country, where he obtained his education. He was graduated from the University of Wisconsin in 1898 with a B. S. degree in electrical engineering. He spent some time in foundries and steelworks of that part of the country, and in 1908 returned to the University of Wisconsin to do research work in metallurgy. A year later he became instructor in metallurgy. After four years at Wisconsin he went in 1912 to the University of Cincinnati to do analytical work in metallurgy and later received a degree in chemical engineering from the University of Wisconsin.

It was about that time that Dr. Aston, with C. F. Burgess, carried on possibly the earliest investigations on record of magnetic properties of iron. He spent about three years in the investigation of electrolytic iron and alloys under a grant of the Carnegie Institution of Washington. After about four years at the University of Cincinnati, where he had charge of the metallurgical department, he in 1914 was appointed metallurgist of the United States bureau of mines, Pittsburgh, where he specialized in corrosion problems. In fact, for 15 to 20 years past he has centered his efforts on corrosion problems and has contributed much to the technical literature extant on that subject.

Jointly with M. O. Withey, Dr. Aston rewrote *"John-*

ston's Materials of Construction." In addition to the paper which won him his 1930 citation, in 1926 he wrote a paper entitled "Trend of Development in the Wrought Iron Industry."

The possibility for research work in the wrought iron industry led him to relinquish his work at the bureau of mines to become affiliated, in 1915, with the Byers company as chief metallurgist. In February, 1926, he was appointed professor of mining and metallurgy and head of that branch of the engineering department, Carnegie Institute of Technology, and he then became consulting metallurgist for the Byers company.

Dr. Aston is a member of American Iron and Steel institute, British Iron and Steel institute, American Electro Chemical society, American Institute of Mining and Metallurgical Engineers, American Society for Testing Materials, American Society for Steel Treating, and Engineers Society of Western Pennsylvania. His fraternities include Sigma XI, Alpha Chi Sigma, Phi Lambda Upsilon and Tau Beta Pi.

Men of the Industry

E P. GAFFNEY, manager of machinery steel division of Crucible steel Co. of America, New York, will serve as manager of the Nitralloy division of that company which has been licensed by the Nitralloy Corp., New York, to enter actively into the manufacture of standard types of these special steels.

* * *

Welton J. Crook was recently appointed consulting metallurgist for Axelson Mfg. Co., Los Angeles.

* * *

George D. Frost has been placed in charge of the newly opened sales office in New York of Brainard Steel Corp., Warren, O.

* * *

Allen B. Coffman, formerly Philadelphia district sales manager for Reliance Electric & Engineering Co., Cleveland, has become identified with Swind Machinery Co., Philadelphia.

* * *

John H. Coughlan has been appointed New England representative for American Manganese Steel Co., Chicago Heights, Ill., with headquarters at 92 Broadway, Cambridge, Mass.

* * *

C. F. Williams Jr. was recently elected president and director of the Williams Iron Works, Tonkawa, Okla., to succeed his father, the late C. F. Williams.

* * *

F. I. Brinegar, assistant district manager of Continental Supply Co., Tulsa, Okla., in charge of sales, has been transferred to the home offices at St. Louis and has been succeeded by O. G. House, formerly branch manager at Seminole, Okla.

* * *

Paul E. Illman has been elected vice president of Dwight P. Robinson & Co. Inc., 125 East Forty-sixth street, New York, builder. He formerly was vice president of the Peoples bank, Buffalo, and more recently was associated with S. W. Straus & Co. and Charles F. Noyes Co., New York. Mr. Illman was graduated from Harvard in 1909.

* * *

Richard F. Straw has been appointed sales manager of Wright Mfg. Co., Bridgeport, Conn., maker of hoists, trolleys and cranes. Mr. Straw has been connected with the company as a sales executive more than 12 years.

H. F. DEVENS

Vice president in charge of operations for Morris & Bailey division, Oliver Iron & Steel Corp., Pittsburgh, who on June 1 was appointed vice president in charge of sales for the parent corporation, as noted in IRON TRADE REVIEW of May 29.

* * *

M. E. Morris, associated for the past ten years with Skillman Hardware Mfg. Co., Trenton, N. J., under the late William G. Wherry, whose death was noted in IRON TRADE REVIEW of May 22, has been appointed executive head of the business.

* * *

Lawrence L. Arnold, Buffalo, who has become affiliated with the Freyn Engineering Co., Chicago, as a consultant on blast furnace operations, sailed from New York, June 3, for Russia, to be attached to the Freyn staff in that country.

* * *

O. C. Steinert, formerly chief engineer of Pittsburgh Steel Co., Pittsburgh, has become affiliated with the engineering force of Blaw-Knox Co., Blawnox, Pa. His main effort will be in the development of equipment for steel plants.

* * *

C. C. Commons was elected first vice president and assistant secretary of Foote Bros. Gear & Machine Co., Chicago.

F. A. Emmons was made vice president in charge of gear and reducer sales and advertising. H. H. Bates is vice president in charge of road machinery, and W. A. Barr, vice president in charge of manufacturing. W. J. Heineman and W. O. Bates Jr. are assistant vice presidents.

* * *

Guiseppe Faccioli has resigned as associate manager and chief consulting engineer, of Pittsfield, Mass., works, of General Electric Co. because of ill health. Mr. Faccioli has been with the company for 25 years and formerly was closely associated with the late Charles P. Steinmetz. He was with Crocker-Wheeler Co. in 1904 as designing engineer. Mr. Faccioli, a graduate of the University of Milan, came to the United States from Italy in 1902.

* * *

Charles E. Beardsley recently resigned as president and director of Beardsley & Wolcott Mfg. Co., Waterbury, Conn. He will devote his entire time to the business of the Bridgeport Brass Co., of which he is president.

R. W. Reid of Providence, R. I., has been made vice president and general manager of the Beardsley & Wolcott company. He has been gen-

eral manager for Taft-Pierce Mfg. Co., Woonsocket, R. I.

Emil Mannweiler, vice president and general manager of Eastern Malleable Iron Co., Naugatuck, Conn., was recently added to the board of the directors of the Beardsley & Wolcott Co.

* * *

Lawford H. Fry has resigned as metallurgical engineer of Standard Steel Works Co., Burnam, Pa., to become railway engineer for Edgewater Steel Co., Pittsburgh. He has had much experience in cars and locomotives both in their testing and in connection with materials used in their construction.

* * *

Paul B. Johnson has become affiliated with the sales department of Clark Controller Co., Cleveland, under W. H. Williams, sales manager.

* * *

G. E. J. Pistor, Hay Foundry & Iron Works, New York, treasurer of the American Institute of Steel Construction, will sail from New York, July 3, for a visit abroad, where he is scheduled to address several group meetings of fabricators. He will visit England, Germany, France, Holland and Belgium, returning to this country in September.

Eastern Furnace Men in Annual Meeting

Annual meeting and election of officers for 1930 of the Eastern States Blast Furnace and Coke Oven association will be held Friday, June 6, at Meadowbrook Golf and Country club, Clarence, N. Y., near Buffalo. Round table discussions on subjects pertaining to blast furnace and coke oven operations are planned for the morning. The afternoon will be given over to golf.

Foundry Group Meets

W. H. Mantz, for many years secretary, was elected president of the Newark Foundryman's association at a meeting in Newark, N. J., May 28. Mr. Mantz, affiliated with the Atlas Foundry Co., Irvington, N. J., succeeds John L. Carter, Sacks-Barlow Foundries Inc., Newark.

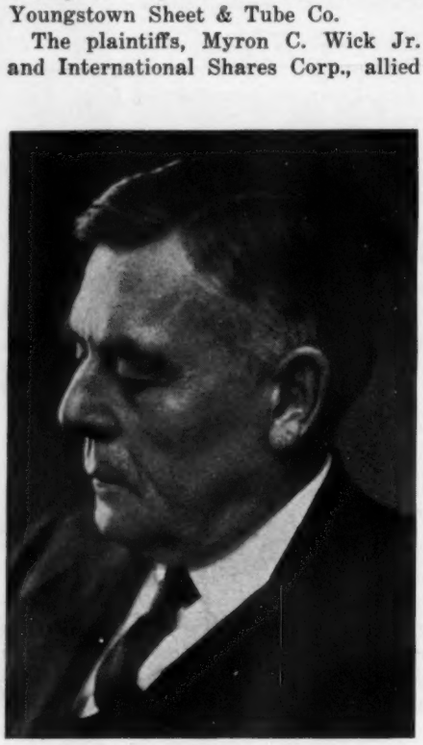
J. G. Pearce, director of the British Cast Iron Research association, principal speaker at the meeting, described the research activities of his associates, touching particularly on cupola practice.

H. L. Edinger, Barnett Foundry Machine Co., Irvington, N. J., was elected vice president, and G. W. Hanney, also of the Barnett company, was chosen secretary to succeed Mr. Mantz. J. A. Williamson, Isbell-Porter Co., Newark, will continue as treasurer.

Bethlehem Officials Give Merger Testimony

Youngstown, O., June 3.—Depositions of Charles M. Schwab, chairman of the Bethlehem Steel Corp., Eugene G. Grace, president, and perhaps other Bethlehem officials, were to have been taken today by attorneys for the plaintiffs in a suit to prevent the absorption by Bethlehem of the Youngstown Sheet & Tube Co.

The plaintiffs, Myron C. Wick Jr. and International Shares Corp., allied with Cyrus S. Eaton, chief opponent of the merger, have not yet filed an amended petition to the answer of the defendants who deny that minority Sheet & Tube stockholders will suffer loss because of the merger. Delays may postpone the trial date tentatively set for June 16.



LAWFORD H. FRY

Attorney General Mitchell announced a few days ago that an investigation of the merger by the United States department of justice failed to indicate that Bethlehem money was used to buy Sheet & Tube stock to be voted for the merger or that there was any violation of the Clayton antitrust law in the proposed consolidation.

Columbian Iron Works Inc., 4254 Vista street, St. Louis, recently increased its capital from $18,000 to $75,000.

National Steel Enters Chicago District

Midwest Steel Corp. has been incorporated in Indiana as a subsidiary of the National Steel Corp., with nominal capital of $100,000, which will later be increased to $50,000,000 or more, it was announced recently.

E. T. Weir, chairman of the board of National Steel Corp., is chairman of the board of directors of Midwest Steel, other officers being John C. Williams, president, and F. M. Hesse, treasurer. C. H. Hunt, of Chicago, is vice president in charge of engineering and construction.

Midwest Steel Corp. will be the operating subsidiary of National Steel Corp. in the Chicago area, and will establish a steel mill representing an investment of between $40,000,000 and $50,000,000 in the Chicago district. While no definite date has been set for the start of construction on the new plant, the company has acquired a 1000-acre tract on Lake Michigan, and on completion of reclamation work the plant site will be approximately 1100 acres.

"The Chicago plant will include blast furnaces, complete steel plant and finishing mill, and will embody the latest developments in modern steel mill construction," said Mr. Weir. "The Middle West has been rapidly growing in importance as a steel consuming center, and establishment of a plant in the Chicago area will mark another step in National Steel's program of diversifying manufacturing operations to locate production close to both consuming markets and sources of raw material supply."

English Firm To Mark Second Century

W. & T. Avery Ltd., Birmingham, Eng., weighing machine and measuring instrument manufacturers, whose bi-centenary falls this year, will hold a commemoration extending over several days in July.

Originating in a small steelyard-maker's shop at No. 11 Digbeth, Birmingham, opened in 1730 by a Mr. Ford, the business has steadily grown until in 1930 the firm is known throughout the world.

The present range of output from the historic Soho Foundry, acquired by the firm in 1897 is large. Its products are seen all over the world. Heavy weighing and testing machines, commercial scales, delicate balances, liquid measures, testing apparatus for textiles, fabrics, and other commodities are included in its products.

Noncorrosive Steel Is Machined Easily

(*Concluded from Page* 81)

duced from chromium-iron alloy, 18-inch diameter, at the Cambria plant, are another example of special use for this type of steel. This feat required slugs 11 inches diameter by 6½ inches long, weighing 170 pounds each, which were forged from a 14-inch ingot.

Because of the magnitude of operations on mills rolling tonnage products, particularly shapes, standardization of practice is essential. Rich alloy compositions are strictly quality products having limited ranges in workable temperatures. From this standpoint, a new practice had to be evolved along with exceptionally close metallurgical observation.

During the past two years the Saucon division has experimented successfully in rolling standard structural shapes from corrosion-resisting alloys on 18 and 22-inch continuous mills, in sizes up to 4-inch angles, channels and beams. The 4-inch shapes were produced from a 22-inch ingot weighing 6405 pounds, converted into 4 x 16-inch blooms and thence to suitable billets.

Recently the Cambria plant rolled special shapes such as window sash and tire rim sections on 9 and 12-inch continuous mills. The experiment included both chromium-iron and chromium-nickel alloy of the 18-8 type.

Standard Color Markings for Patterns Adopted

Standard color marking for foundry patterns and core boxes to indicate the exact intention of the pattern maker have been adopted as recommended by the bureau of standards, Washington, by more than 450 firms and associations. These groups have indicated that the system of color marking will be made a part of their regular practice.

According to this system, surfaces to be left unfinished are to be painted black; surfaces to be machined are to be painted red; seats of and for loose pieces are to be marked by red stripes on a yellow background; core prints and seats for loose core prints are to be painted yellow; while stop-offs are to be indicated by diagonal black stripes on a yellow base.

Some variations in the shades of the color are permitted. The colors may be obtained by mixing suitable inexpensive pigments with shellac or varnish so as to produce any type of coating material required for a given condition. Copies of the markings which became effective Feb. 10, and which are known as commercial standard No. 10, may be obtained from the superintendent of documents, Washington, for 10 cents.

Bituminous Coal Gains

Bituminous coal production in the week ended May 24 was 8,312,000 net tons, compared with 8,169,000 tons the week preceding and 9,286,000 tons in the corresponding week of 1929. For the calender year to date output of bituminous coal has been 189,369,000 tons, against 208,630,000 tons a year ago.

Build Street Railways

Chicago, June 3.—Approval of the new traction ordinance at the forthcoming referendum, in a few weeks, will release the construction of about 300 miles of new elevated and surface lines, with expenditures totaling several hundred million dollars over a 10-year period. An extensive subway system is included.

Obituaries

HENRY D. BOOTH, 70, who retired as vice president and general manager of Midvale Steel & Ordnance Co., Philadelphia, in 1921, died May 29 at his home in Germantown, Pa. He was born in New Castle, Del., Aug. 14, 1860, and his first industrial experience was in the shipyards of Harlan & Hollingsworth Co., Wilmington, Del. He entered United States Naval academy and in September, 1876, he was employed by Diamond State Iron Co., Wilmington, where he remained for more than three years. In June, 1880, he became affiliated with the Midvale company as shipping clerk. Three years later his activity was directed toward ordnance forging and gun production. He has filled the position of superintendent of practically every department in the Midvale works. He planned to resign in 1917 but was persuaded to remain to oversee ordnance production for the United States navy during the World war.

* * *

John C. Bartlett, treasurer of Braden Steel Corp., and treasurer and assistant secretary of Braden Steel & Winch Co., Tulsa, Okla., died May 29.

* * *

James Mauran Betton, 77, hydraulic engineer, formerly associated with Henry R. Worthington, New York, died at Washington, May 29. He was born in New York and attended Harvard university. He was a member of the American Society of Civil Engineers.

* * *

James M. McCarthy, 66 vice president of Price Bros. & Co., and vice president and treasurer of the American Freight & Traction Co., New York, died May 22 at his home in Quebec Que. Mr. McCarthy was the designer and builder of the substructures of many bridges in Canada and the United States.

* * *

Ernest F. Decker, president of E. F. Decker Saw Works Inc., Albany, N. Y., died May 10.

* * *

Frank H. Truax, 58, member of the board of directors of the Simmons Co., Kenosha, Wis., and New York, and manager of the traffic and service divisions, died at New York, May 28. He entered the service of the Simmons Co. at Kenosha in 1905, but removed to New York when the general offices were transferred.

* * *

Charles M. Ams, president of Max Ams Machine Co., New York, and of Max Ams Inc., that city, died at his home in Pelham, N. Y., May 25, after a prolonged illness. He founded the Sanitary Can Co., which later merged with American Can Co. He was one of the founders and at one time was president of the Can Machinery and Supplies association. His effort latterly was in the manufacture of can making machinery.

* * *

Cambell P. Higgins, 72, an authority on steam boilers and inventor of 80 or more boiler improvements and accessories, died at his home, Roselle, N. J., May 29. He had been connected with Babcock & Wilcox Co., New York, as director since 1881. He spent several years at Glasgow, Scotland, as a young man, in steam boiler research. Mr. Higgins was a native of Ballston Spa, N. Y., and was a member of the American Society of Mechanical Engineers and the American Society of Naval Architects.

Zinc Output in 1929 at High Level

Production of slab zinc at zinc reduction plants in the United States in 1929 was 671,868 short tons, valued at $88,687,000, according to statistics compiled by the United States bureau of mines, department of commerce. This consisted of 611,209 tons of primary metal made from domestic ore; 13,311 tons of primary metal made from Mexican ore; and 47,348 tons of redistilled secondary metal. Production in 1929 was 20,621 tons larger than in 1928, or over 3 per cent.

States having the largest output of primary metal were: Montana, with 139,510 tons; Oklahoma, with 111,683 tons; Illinois, with 110,007 tons; and Pennsylvania, with 108,167 tons. The production for Montana is all electrolytic zinc and includes a small quantity of electrolytic zinc from Illinois. The remainder of the output was smelted in Arkansas, Idaho, Indiana, Kansas, Texas, and West Virginia.

The apparent consumption of primary zinc in the United States in 1929 amounted to 564,000 tons, a decrease of 14,000 tons from the apparent consumption in 1928.

Rolled zinc produced in the United States in 1929 was 136,667,203 pounds, valued at $12,105,177. These figures, compiled from reports made by producers to the bureau of mines, show a drop of 7 per cent in quantity and 2 per cent in value of output, compared with 1928. All classes of rolled zinc showed decreases in production in 1929. Total exports of rolled zinc increased 22 per cent.

The average selling value of rolled zinc was 8.9 cents a pound in 1929, compared with an average selling value of 8.4 cents in 1928.

Rate Boost Is Fought

Manufacturing interests in South Bend, Ind., are planning to continue opposition to proposed increases in iron and steel freight rates, following action of the Indiana public service commission suspending a 20 per cent boost on petition of the traffic department of the South Bend chamber of commerce. The increase raised the freight charges between South Bend and Gary and the Calumet district where most of the steel used by the South Bend manufacturers is produced, from $2.50 to $3 a ton. More than 100,000 tons of iron and steel is shipped into South Bend annually.

The suspension will make it necessary for the railroads to appear at a hearing before the commission June 18 to show cause why the rate should be increased. The suspension, however, is effective for a period of 120 days, pending decision of the commission to permit the increase or make the suspension permanent.

Coast Scrap Industry Is Organized

Organization of the scrap iron industry on the Pacific coast was completed at a luncheon-meeting in Seattle, May 30, in honor of Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel Inc. Dealers from British Columbia, Washington and Oregon, who attended the luncheon, affiliated with the Pacific Coast chapter of the institute, which was organized at a meeting held in Los Angeles, May 21.

The meeting completed the tour of Mr. Schwartz on the Pacific coast to survey the scrap iron markets and interpret the institute and its machinery to the dealers. The Seattle meeting was preceded by a dinner-meeting at the Athens Athletic club in Oakland, Calif., the night before, attended by dealers in the San Francisco territory.

The Pacific Coast chapter of the institute, comprising 35 members, is the thirteenth chapter, the others being located in St. Louis, Chicago, Cleveland, Cincinnati, Pittsburgh, Buffalo, Reading, Boston, Hartford, New York, New Jersey and Philadelphia.

Unique Locomotive Tests Bearing Performance

In order to secure complete and accurate data on every phase of bearing performance under a variety of operating conditions, the Timken Roller Bearing Co., Canton, O., has put into service on the Pennsylvania railroad a special locomotive designed by engineers of the company and built by the American Locomotive Co., New York. The locomotive is to be loaned to different railroads for varying periods, to be used in their regular service. During its stay on each road its performance and that of the bearings, is to be carefully observed and recorded.

The new locomotive is of the 4-8-4 type and is intended to develop the possibilities of antifriction bearings as applied to the axle journals. It is capable of operation on both freight and passenger runs. Alloy steel has been used extensively in the design and it is equipped with tapered roller bearings throughout. It is the first locomotive to be so completely antifrictionized. The bearings are used on the main drivers, the engine trucks, trailer trucks, tender trucks, crankshaft and idler gear of the Franklin booster.

Shipments of Manganese Ore Increased

Domestic production and shipments of manganese ore containing 35 per cent or more of manganese increased in 1929 for the first time since 1925, according to the bureau of mines. The increase was due largely to the gain in output of sintered rhodochrosite in Montana.

Shipments from domestic mines were 60,379 long tons, valued at $1,612,357, in 1929, compared with 46,860 tons, valued at $1,214,853, in 1928. In 1929, 47,597 tons was metallurgical ore and 12,782 tons chemical ore, compared with 31,430 tons of metallurgical or and 15,430 tons of chemical ore in 1928. Shipments of metallurgical ore in 1929 were 16,167 tons more than in 1928, whereas shipments of chemical ore in 1929 were 2648 tons less than in 1928.

Manganese ore was shipped from 11 states in 1929, of which Arizona, Arkansas, Georgia, Idaho, Montana, New Mexico, and Virginia furnished 98 per cent of the total. Montana was the chief producing state, supplying 70 per cent of the total.

Mellon Institute Issues 1929 Bibliography

Bulletins, research reports, papers, and patents written by members of the Mellon Institute of Industrial Research, Pittsburgh, during 1929 are listed in the third annual supplement to *Bibliographic Bulletin No.* 2 of the institute. This addition lists seven bulletins, 50 research reports, 59 other papers, and 16 domestic and 15 foreign patents, while the total contributions for the 18 years ended Jan. 1, 1930, have been 15 books, 96 bulletins, 528 research reports, 849 other articles, 407 domestic patents and 295 foreign patents. Copies of the third supplement and the preceding numbers of the series, will be sent to laboratory directors, librarians, science teachers, and institutional heads upon request.

Nickel Industry Receives Radio Salute

The nickel industry was saluted May 27 over a coast-to-coast radio broadcast sponsored by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The principal address was presented by A. J. Wadhams, manager of development and research, International Nickel Co. Inc., New York, who traced the history of the element, described its use by other industries, and told of the progress and difficulties encountered in producing it.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

BLAW-KNOX CO., Pittsburgh, has been given an order by the Illinois Steel Co., Chicago, for reversing valves, stack and waste-heat boilers for 14 new open-hearth furnaces at South Works, Chicago, and for seven at the Gary Works, Gary, Ind. Another order covers similar equipment for six open-hearth furnaces each at the Lackawanna Works and Sparrows Point Works of the Bethlehem Steel Corp. These valves are also being installed on six open-hearth furnaces at the Great Lakes Steel Corp. plant of the National Steel Corp. at Detroit, and on three tilting furnaces at the plant of the National Tube Co. at McKeesport, Pa.

* * *

THOMPSON PRODUCTS INC., Cleveland, C. E. Thompson, president, has organized an aeronautic division to care for increasing demand for its products for aircraft use. A section covering 150,000 square feet at the Cleveland plant will be devoted to aircraft valve manufacturing and advanced experimental work will be carried out in a modern dynamometer testing laboratory. The company now serves 90 per cent of American aircraft engine builders.

* * *

LINK-BELT CO., Chicago, has moved its Baltimore office to 913 Lexington building. H. D. Alexander is in charge of this office and Harry E. Reese is in charge of sales.

* * *

AMERICAN STEEL & WIRE CO., subsidiary of the United States Steel Corp., has been appointed sole licensee in America of the Bleichert and Bleichert-Zuegg System, builders of aerial passenger tramways, which hitherto have been built only in Europe.

* * *

REPUBLIC STEEL CORP., Youngstown, O., has moved its Philadelphia sales office to the twentieth floor of the Fidelity-Philadelphia Trust building, 123 South Broad street.

* * *

ANDREWS-FREY SALES CO. has been organized at Philadelphia and has opened offices in the Lewis Tower Building to handle cylinders for high-pressure gases, steel billets and bars and other steel products. The company is composed of E. C. Frey, formerly general manager of the Harrisburg Pipe & Pipe Bending Co., and F. D. Andrews, formerly general superintendent for the same company.

* * *

BRISTOL CO., Waterbury, Conn., manufacturer of set screws and cap screws, has been granted a manufacturing and selling license by the Dardelet Threadlock Corp. under its patents for self-locking screw threads.

* * *

JEFFERSON ELECTRIC MFG. CO., Chicago, manufacturer of electrical devices, has organized a Canadian branch under the name Jefferson Electric C*. Ltd. and has started operations on Bloor street west. A. A. Anderson, Chicago, has been appointed manager.

* * *

OTIS STEEL CO., Cleveland, E. J. Kulas, president, has a program for immediate improvement, including three 500-horsepower boilers, an annealing furnace for electric steel castings and new welding and grinding equipment for the electric steel foundry. Recent installation of an electric furnace for production of alloy steels has called for the additional facilities and production of electric steel castings will be doubled, increasing to about 400 tons per day.

* * *

JOSEPH T. RYERSON & SON INC., Chicago, steel warehouse, has bought the plant of the Tioga Steel & Iron Co., Fifty-second street and Grays avenue, Philadelphia, and is establishing a branch there. Joseph Turner Ryerson, founder of the present business, left Philadelphia in 1842 to establish an iron store in Chicago. After 87 years his descendants return to the city to serve it in steel and iron.

* * *

COOPER-BESSEMER CORP., Mt. Vernon, O., has received recent orders for gas engine compressors aggregating $522,000. One order was for two twin compressors for use in the United States government helium plant near Amarillo, Tex. At this plant all of the helium now being made by the United States Helium division is being produced. It is the largest helium operation in the world. Another order is for five large gas engine compressors costing $175,000 for the Carbide & Carbon Chemicals Corp. plant at Charleston, W. Va.

* * *

EDWARD VALVE & MFG. CO., East Chicago, Ind., has appointed Riffe & Thomas Inc., Charleston, W. Va., its representative in that territory, succeeding the W. A. Ross Co.

* * *

WHEELING TUBE CO. is building a butt weld tube plant at McMechen, W. Va. The first unit, 120 x 300 feet, is now under construction and is planned to start operations by July 1. Tubing from ¾-inch to four inches will be produced, welded by acetylene.

* * *

CRANE CO., Chicago, will observe its seventy-fifth anniversary, June 29 to July 3. Chicago will be the center of the observance and Crane employes the world over will have picnics July 3 to close the celebration.

* * *

ORE-METAL TRADES ASSOCIATION, Portland, Oreg., has elected ed the following officers for the coming year: President, H. M. Bird, Columbia Steel Co.; vice president, C. H. Pape, Independent Foundry Co.; treasurer, Ray Smythe, Willamette Iron & Steel Co.; secretary, F. J. Danaher.

* * *

FRANK D. CARNEY, L. P. Ross and Harrison Siuder, consulting engineers, have removed their offices to the new Bank of Manhattan building, 40 Wall street, New York, from temporary quarters at 27 Pine street.

* * *

MANITOWOC SHIP BUILDING CORP., Manitowoc, Wis., is increasing capitalization by $500,000 through change in common stock, it is announced by J. E. Thiel, secretary. The company now has $1,000,000 in common shares with par at $100, and after the increase the common issue will be valued at $1,500,000, with the par value at $10 per share. The preferred stock, 10,000 shares with $100 par value, or $1,000,000, remains unchanged. The concern is experiencing

a busy season. Construction has just been started on a new carferry for the Grand Trunk line and the payroll at present numbers upwards of 1200.

* * *

SUPERHEATER CO., New York, has moved its offices from 17 East Forty-second street to the Lincoln building, 60 East Forty-second street.

* * *

BUCYRUS-ERIE CO. is building a chemical and physical laboratory costing $50,000 at its main works in South Milwaukee, Wis. The building is expected to be ready late in tre summer. When the new facilities are ready, the present laboratory quarters will be converted into a machine shop extension.

* * *

SQUARE D CO., Detroit, manufacturer of electrical control and safety equipment, has merged with the Diamond Electrical Mfg. Co., Los Angeles. The executive personnel of the Square D company will remain the same as before, with Vernon Brown and J. H. Pengilly, Los Angeles, added as vice presidents. The consolidation gives the Detroit company a strong manufacturing and sales outlet on the Pacific coast. The lines manufactured by the two companies are similar and each will be supplemented by the other. The Square D company absorbed the Industrial Controller Co., Milwaukee, in 1929, taking over its line of remote motor control equipment.

* * *

WESTINGHOUSE ELECTRIC & MFG. CO., East Pittsburgh, Pa., has taken an order for 20 synchronous motors and control equipment to drive pumps in booster stations on oil pipe lines between Sand Springs, Okla., and Chicago. Six stations will each have three motors rated at 800 horsepower at 1800 revolutions per minute and one station will have one 450-horsepower motor at 450 revotions per minute. The 800-horsepower motors are cast frame bracket bearing motors and the 450-horsepower motors are completely fabricated by welding and have pedestal bearings.

See Steel Tubes Made

Members of the Engineers' Society of Milwaukee and ladies made an inspection trip through the plant of the Globe Steel Tubes Co., 1345 Burnham street, Milwaukee, June 4. The invitation said: "See how seamless steel tubes are made. Follow the birth of a tube 4 inches in diameter and 30 feet long from a cylindrical billet 4 inches in diameter and 30 inches long, in nine seconds, without waste."

The visit also was a homecoming to Frank J. O'Brien, president of the Globe company, who had just returned from a European trip.

April Foundry Output Up

Worcester, Mass., June 3.—Production of 3,337,292 pounds of castings was reported in April by 11 foundries comprising the Worcester Foundry council. This tonnage compares with 3,160,872 pounds for March and 4,916,263 pounds produced during April, 1929. Four-month totals for 1930 compare unfavorably with the same period of last year, as shown in the monthly output table following:

1929	
April	4,916,263
Total (4 mos.)	18,143,716
May	5,231,926
June	4,199,102
July	4,192,693
August	4,869,912
September	3,946,064
October	4,456,646
November	4,108,685
December	2,819,796
Total, 1929	51,968,540
1930	
January	2,862,705
February	2,786,850
March	3,160,872
April	3,337,292
Total (4 mos.)	12,145,719

Truck Shipments Slump

Washington, June 3.—April electric truck and tractor shipments show a total of 101 units and represent the lowest figure in more than 16 months. Both domestic shipments and exported trucks and tractors dropped off, according to the department of commerce. April's shipments represent practically half the total of April, 1929, and 4-month total for 1930 shows less than during the corresponding period of 1929. Monthly shipment reports are shown in the following:

		Shipments	
1929	Total	Domestic	Export
April	194	181	13
Total (4 mos.)	691	646	45
May	211	202	9
June	201	185	16
July	168	163	5
August	154	144	10
September	158	151	7
October	167	134	33
November	118	110	8
December	151	124	27
Total (year)	2,019	1,859	160
1930			
January	140	123	16
February	113	106	7
March	123	109	14
April	101	96	5
Total (4 mos.)	477	454	42

Inland Sheet Mills On

Milwaukee sheet mills of the Inland Steel Co., Chicago, have resumed production on a full-time basis, after a short letdown with a 24-hour schedule. The entire force of 650 has been recalled. Improved demand for sheets for the building and automobile industries is responsible for the resumption of operations.

Enameled Ware Declines

Washington, June 3.—Enameled sheet metal ware fell off in April, when only 318,431 dozens were shipped, to the lowest since November, 1929. Manufacturers' reports to the department of commerce show that the first four months of 1929 were greater than the same period of 1930. Following are comparisons:

	In Dozens			
1929	Total	White	Gray	Colored
April	463,577	194,971	137,764	130,842
Total (4 mos.)	1,731,450	756,340	573,818	411,292
May	352,885	156,195	109,165	87,525
June	337,375	147,285	89,919	100,171
July	290,532	127,058	90,454	73,020
Sept.	338,169	143,505	101,127	93,537
Oct.	371,292	158,138	112,391	100,763
Nov.	305,714	115,117	100,144	90,453
Dec.	391,523	103,404	107,643	180,476
Total, year	4,504,102	1,861,011	1,403,419	1,239,672
1930				
Jan.	332,146	110,758	106,484	114,904
Feb.	331,915	120,523	93,225	118,167
March	341,372	124,856	107,836	108,680
April	318,431	124,562	104,119	89,750
Total (4 mos.)	1,323,864	480,699	411,664	431,501

Mirrors of Motordom

(*Concluded from Page* 88)

six engines, which are cast in the same foundry, afford an apt comparison. The Pontiac six engine, which weighs about 200 pounds at the final assembly, in 20 minutes cools sufficiently to be taken to the "shakeout." The Oakland eight, which weighs about 280 pounds complete, must cool three hours before coming out of the sand.

* * *

COMPARING automobile production in the first quarter of 1930 with the like period of 1929, Ford and Chevrolet of course maintained their lead. Buick, Dodge, Oldsmobile, DeSoto and Chrysler bettered their standing, while Pontiac and Plymouth held their rank. Following is a comparison of the first 15 producers:

	1930 rank	1930 production	1929 rank	1929 production
Ford	1	282,130	1	266,295
Chevrolet	2	170,027	2	166,798
Buick	3	22,623	6	31,709
Essex	4	20,575	3	49,709
Pontiac	5	19,708	5	33,360
Dodge	6	17,909	7	28,506
Whippet-Willys	7	14,859	4	46,574
Oldsmobile	8	14,236	9	19,005
Chrysler	9	12,458	10	17,499
Nash	10	11,360	8	23,704
DeSoto	11	10,145	15	11,495
Plymouth	12	9,871	12	14,825
Studebaker	13	9,433	11	16,149
Hudson	14	9,298	13	14,802
Hupmobile	15	6,810	20	7,815

Bids are in on 190,000 feet of ⅝-inch galvanized wire for United States engineers at New Orleans. Bids were taken June 3 for six months' needs at Mobile, Ala.

European Markets Still Depressed

Indian Pig Iron Landed in Scotland—Middlesbrough Sales Improved Slightly—Galvanized Sheets Finding Better Demand in Canada

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, June 3.—(*By Cable*)—Continued depression is reported in the German and Belgian iron and steel markets. In France the domestic market tends to deteriorate and exports are lethargic.

Conditions in Great Britain show little improvement. Midland pig iron producers refuse to reduce their prices. Consumers are dissatisfied and buying has practically ceased. Derbyshire pipe foundries are active. East coast hematite is being exported at prices below £3 14s $17.98). Middlesbrough pig iron sales have improved slightly. A cargo of 5100 tons of Indian pig iron has been landed in Scotland.

Builders of rolling stock in Birmingham have received orders for 100 freight cars from Brazil. Steel business in South Wales is slow. Demand for structural steel is quiet. General engineering activities are fair. Makers of galvanized sheets find the market in Canada improving, but sales to India and Japan are declining. Orders for tin plate are moderate and prices are being shaded.

Renewed Buying Helps British Steel Markets

Birmingham, Eng., May 23.—(*European Staff Service*)—The steel industry in the north of England has been encouraged by announcement this week of several large orders, chief among them being a contract booked by Dorman Long & Co. Ltd. from the Union of South Africa for 45,000 tons of rails and fishplates. According to the Cairo newspaper *Al Siassan*, the Cleveland Bridge Co., Darlington, will probably be awarded the contract for construction of the new Kasr-el-Nil bridge at Cairo. Smiths Dock Co. Ltd., South Bank, has also been successful in obtaining an order for nine whalers at a contract price of £524,500, all the vessels to be delivered by June next year. In addition to this there

Sterling $4.86

is the possibility of Soviet Russia spending heavily in Britain on steel and machinery.

These indications of activity are welcome to the Middlesbrough steel trade as an improvement on recent conditions is a necessity if the works are to be kept going. The Steel association maintains its prices for all heavy steel material but there appears to be some holding back among consumers, in the hope of concessions. Reductions have taken place in raw materials, particularly in the north, and there is a strong feeling that it is time some move was made in bringing down values.

Staveley Coal & Iron Co., Derbyshire, continues to book orders for cast iron pipe for municipalities in various parts of the country, and this activity is largely responsible for much of the output of pig iron in Derbyshire.

The Iron exchange yesterday presented another dull market and it is clear that a good deal of pig iron is going into stock. The monthly meeting of the Central Pig Iron Producers association falls due next Thursday when it is expected the price position will again come up for review and possible reduction.

An encouraging feature is activity among makers of foundry equipment.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 2	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$16.40	3 7 6*	$16.28	3 7 0	$16.28	3 7 0	$16.28	3 7 0
Basic-Bessemer	15.92	3 5 6	15.07	3 2 0	15.07	3 2 0	15.80	3 5 0
Hematite, Phosphorus 0.02-0.05	17.98	3 14 0	24.69	630*	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$29.77	6 2 6	$22.84	4 14 0	22.84	4 14 0	$22.60	4 13 0
Wire rods	41.31	8 10 0	30.38	6 5 0	30.38	6 5 0	30.38	6 5 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	31.59	6 10 0	$31.59	6 10 0
Merchant bars	1.74c	8 0 0	1.18c	5 7 6	1.18c	5 7 6	1.18c	5 7 0
Structural shapes	1.68c	7 15 0	1.12c	5 1 6	1.12c	5 1 6	1.12c	5 1 6
Plates, ship, bridge and tank	1.79c	8 5 0	1.44c	6 10 6	1.44c	6 10 6	1.49c	6 15 0
Sheets, black, 24 gage	2.17c	10 0 0	2.20c	10 0 0	2.20c	10 0 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.47c	11 7 6	2.57c	11 13 9	2.57c	11 13 9	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.29c	5 17 6	1.29c	5 17 6	1.29c	5 17 6
Plain wire, base	2.06c	9 10 0	1.46c	6 12 6	1.46c	6 12 6	1.46c	6 12 6
Galvanized wire, base	3.04c	14 0 0	1.76c	8 0 0	1.76c	8 0 0	1.76c	8 0 0
Wire nails, base	2.39c	11 0 0	1.46c	6 12 6	1.46c	6 12 6	1.54c	7 0 0
Tin plate, base box 108 pounds	$ 4.43	0 18 3	.....	.....	.....	.....	$ 8.99	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported		Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$16.40	$19.21	490(2)	$17.30	620	$20.29 85
Basic pig iron	15.92	20.58	525(1)	15.07	540	21.72 91
Furnace coke	3.40	6.59	168	6.00	215	5.13 21.50
Billets	29.77	24.30	620	22.60	810	28.88 121
Standard rails	1.79c	1.46c	810	1.62c	1,245	1.51c 140
Merchant bars	1.74c	1.24c	690	1.25c	965	1.52c 141
Shapes	1.84c	1.26c	700	1.22c	940	1.49c 138
Plates, ship, bridge and tank	1.95c	1.46c	810	1.52c	1,170	1.71c 158
Sheets, black, 24-gage	2.28c	2.72c	1,510	2.60c	2,000	1.40c 130
Sheets, galvanized 24 gage, corrugated	2.58c	3.52c	1,955	3.06c	2,350	3.78c 350
Plain wire	2.06c	2.03c	1,125	2.15c	1,650	2.43c 225
Bands and Strips	2.17c	1.39c	770	1.50c	1,150	1.77c 164

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 14s 0d ($3.40) f. o. b. Ferromanganese £19 6s 0d ($93.99) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($73.05) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

The Constructional Engineering Co. Ltd., Birmingham, is busy on this class of work and has recently booked orders for cupolas and melting equipment, all of which have been for British makers of light castings. It is evident that founders are not letting the grass grow under their feet but are preparing for the revival in trade which must come later in the year.

Midland rail car builders have booked some small orders from South America. The Buenos Ayres & Pacific Railway has awarded four atmospheric tank wagons to the Birmingham Railway Carriage & Wagon Co. Ltd., Smethwick, and the Sao Paulo Brazilian railway has placed a contract with the Gloucester Railway Carriage & Wagon Co. Ltd. for eight second-class bogie passenger cars. These will be welcome to Midland works as the volume of business taken in first half has been below that of 1929.

In the Middlesbrough district only 34 furnaces are in blast, compared with about 65 working in pre-war days. Capacity of the modern furnace is much larger than the old type and is heavier than is needed for present requirements. Stocks are increasing as consumers are buying sparingly to meet immediate needs only. Shipments for the month are about 1000 tons below the corresponding period of April. The blowing out of furnaces on east coast hematite has steadied the market, the reduced production being more in keeping with demand and stocks are not showing great increase.

The steel trade in the Barrow area will benefit from orders placed for rails with Dorman Long as a substantial proportion of the material will be rolled in that district. Several weeks employment is guaranteed for rail mills at Barrow with orders already on the books. Stocks of west coast hematite are small and producers are able to maintain prices though they admit they barely cover costs of production. Most iron exported is chiefly superior low phosphorus qualities.

Makers of iron strip in South Staffordshire are hopeful they will be able to come through the present difficult period. There have been depressions before, and if a few orders can be secured to keep mills open no doubt manufacturers will tide over until revival comes. The great difference between the price of finished steel and Staffordshire puddled iron is of course the obstacle to business even in normal times, but in the present depression consumers are more than ever inclined to buy the cheaper material. Iron strip costs £11 2s 6d ($54.06) a ton. Marked bars are steady at £12 10s ($60.75) with some mills regularly engaged. Steel strip manufacturers are able to work a five day week as they have a fair demand from motorcycle and cycle makers for good quality strip. They are, however, faced with Continental competition as the Continent can supply strip delivered at £6 17s 6d ($33.40), whereas good quality Staffordshire steel strip costs £8 10s ($40.51) a ton.

In galvanized sheets there is no improvement over the dull conditions which have prevailed during the last few months. This week makers have reviewed their prices and have made no change except for 30-gage which has been dropped 10s ($2.43) to £15 7s 6d ($74.71). The chief complaint is lack of overseas business for home consumers have sent in quite a number of useful orders which have enabled mills to make a fair output. New tin plate business has been centered upon prompt shipments to the Continent and South America, and it is believed that buyers have been holding off in the hope of lower prices, having in mind the slump which has taken place in tin. Some producers of tin plates have made slight concessions, accepting business at 18s 3d ($4.44) per box, but this price hardly covers the cost of production. Demand for heavy steel scrap in South Wales and the Midlands continues restricted and merchants find values slipping from week to week to an alarming degree.

German Exports Higher, Imports Less

Berlin, May 23.—(*European Staff Service*)—Exports of pig iron, ferroalloys and iron and steel products from Germany in March were greater than in February, while imports were less. The principal items exported in March were: merchant steel, hoops and bands, 136,970 tons; black plates and sheets, 52,078 tons; semi-finished steel products, 38,037 tons; wire rods and wire, 29,010 tons; railroad track material, 25,969 tons; forgings, 24,556 tons; tubes, 22,932 tons. The tonnage of scrap exported was 35,147 tons.

The March imports consisted principally of merchant steel, hoops and bands, 47,384 tons, followed by semi-finished steel, 14,250 tons. The tonnage of scrap imported was 12,077 tons. Comparisons follow, in metric tons:

	—IMPORTS—		—EXPORTS—	
Mon. ave.	Pig iron and ferro-alloys	Other iron and steel	Pig iron and ferro-alloys	Other iron and steel
1927.....	23,895	217,505	29,910	347,645
1928.....	25,535	174,250	24,585	394,575
1929.....	14,765	137,435	36,115	448,330
1930				
Jan.	22,004	105,127	33,153	488,245
Feb.	13,597	98,397	24,271	409,822
March ..	16,777	107,401	25,983	465,166

British Trade Shrinks

London, May 23.—(*European Staff Service*)—Exports of pig iron, ferroalloys and iron and steel products from Great Britain in April were less than in March. The April pig iron tonnage was composed of 259 tons of forge, 10,779 tons of foundry, 12,125 tons of acid, 150 tons of basic pig iron, and 6787 tons of ferroalloys. Of the pig iron exports, 4446 tons went to Belgium and 4117 tons to France. Galvanized sheets totaled 44,251 tons, of which 13,418 tons went to India; tin plate and terne plate amounted to 38,104 tons; which were fairly equally divided between all foreign markets; railroad material totaled 34,170 tons, of which 19,164 tons were steel rails, the greater part of which, 2216 tons, went to the Argentine Republic, the total including 9200 tons of sleepers and fishplates; wrought iron pipe, 19,266 tons, of which 2654 tons went to India and 2433 tons to Persia; merchant steel, 18,304 tons, of which 3977 tons went to India; black plates and sheets, 14,488 tons, which went mainly to Australia, Japan, the Argentine Republic and India; cast iron tubes, pipes and fittings, 11,619 tons, of which the largest item, 1546 tons, went to the Argentine Republic.

Imports of pig iron, ferro-alloys and iron and steel products into Great Britain in April were also lower than in March. Comparisons follow:

	—IMPORTS—		—EXPORTS—	
Mon. ave.	Pig iron and ferroalloys	Other iron and steel	Pig iron and ferroalloys	Other iron and steel
1927	50,715	316,455	27,580	322,100
1928	9,935	231,390	37,895	317,210
1929	12,310	222,410	45,430	319,520
1930				
Jan.	15,770	294,546	40,445	311,401
Feb.	24,252	235,144	26,865	267,422
March ..	23,186	257,106	39,461	298,253
April	21,254	213,552	30,100	237,895

April Belgian Tonnage Low for Two Years

Brussels, May 23.—(*European Staff Service*)—A substantial drop in production of pig iron and steel in Belgium was registered in April, as was to be expected by the tendency of the markets.

Production of pig iron and steel was the lowest since February, 1929, which was an abnormal month, and previous to that date, such low figures as those obtained in April this year had not been reached since April, 1928. Comparative figures follow, in metric tons:

Mon. ave.	Coke	Act. Furn.	Pig iron	Steel ingots and castings	Finished steel
1913	294,000	....	207,055	205,550	154,920
1927	448,880	....	312,620	309,040	255,185
1928	493,885	....	325,445	327,870	281,125
1929	498,700	58	341,330	344,370	296,370
1930					
Jan.	505,990	58	343,380	340,200	296,220
Feb.	451,680	57	315,320	321,480	271,430
Mar.	498,050	57	341,820	359,150	258,770
April.	474,950	56	313,250	312,550	252,150

British Output Falls

London, May 23.—(*European Staff Service*)—Production of pig iron in Great Britain in April fell off from March but exceeded that of April, 1929. The output included 194,300 tons of hematite, 242,200 tons of basic, 134,700 tons of foundry and 26,800 tons of forge pig iron.

The output of steel ingots and castings in April was far below that of March and of April, 1929. Comparisons follow, in gross tons:

(Gross tons)

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	338(*)	855,000	638,600
1927	149	607,700	758,100
1928	132	550,900	710,400
1929	162	631,600	804,560
1930			
Jan.	159	650,000	771,100
Feb.	162	607,000	776,400
March	157	665,800	826,100
April	151	619,600	696,100

(*) Average for year.

CONSTRUCTION and ENTERPRISE

Concise, Timely Business Building Opportunities from Field of Industry

North Atlantic

HAMDEN, CONN.—Connecticut Co., 185 Church street, New Haven, Conn., plans to build a power substation here, costing about $50,000. R. W. Foote, care company, has plans.

HARTFORD, CONN.—Hartford Special Machinery Co. will build a plant addition although plans are not expected to materialize until early fall.

STAMFORD, CONN.—Norma Hoffman Bearings Co., Hamilton street, manufacturer of ball bearings, has awarded contract at cost estimated to be $125,000 for a 1 and 2-story plant.

BALTIMORE—Acme Steel Engineering Co., 917 South Howard street, is inquiring for welding equipment and a compressor.

CAMBRIDGE, MASS.—Ford Motor Co. plant here is being reopened to employ about 500 to 600 men, with the prospect of doubling that number soon. Truck division will be centered here.

CONCORD, MASS.—Edison Electric Illuminating Co., 39 Boylston street, Boston, is receiving bids for a power station here on Main street, estimated to cost $50,000. Architects Bigelow, Wadsworth, Hubbard & Smith, 11 Beacon street, Boston, have plans.

NEWTON, MASS.—Department of public buildings will expend about $50,000 for alteration of boiler house in technical school here.

OTTER RIVER, MASS.—Otter River Foundry Co., manufacturer of stoves, suffered damage to plant building recently by fire and loss is estimated at $10,000.

FORT LEE, N. J.—Consolidated Film Industries Inc., Lemoine avenue, has plans through G. W. Dexter, 210 Main street, for a 1-story, 25 x 240-foot machine shop estimated to cost $75,000.

HACKETTSTOWN, N. J.—Architect F. W. Wentworth, 140 Market street, Paterson, N. J., has plans for a 1-story boiler house to be built here for the Centenary Collegiate institution.

JERSEY CITY, N. J.—Board of hospital commissioners has plans through Architect J. T. Rowland Jr., 30 Journal square, for a power plant addition at Montgomery and Baldwin streets.

NEW BRUNSWICK, N. J.—W. E. S. Dyer, architect and engineer, Land Title building, Philadelphia, is reported designing a plant here for an unnamed interest for the manufacture of wire products. Cost is said to be approximately $1,000,000.

PHILLIPSBURG, N. J.—A. N. Leidy plans rebuilding distributing and storage unit devoted to electrical equipment and supplies, that was recently damaged by fire.

PREAKNESS, N. J.—Austin Co., 120 Broadway, New York, is architect for an airport construction here to include machine and repair shops, hangars and other units for the municipality. Estimated cost, $200,000. Bids were received June 1.

NEW YORK—Keiner Williams Stamping Co. plant, 6746 123rd street, Richmond hill, was damaged by fire recently. Company is a manufacturer of metal goods and stampings.

TARRYTOWN, N. Y.—Fisher Body Corp., subsidiary of General Motors Corp., will spend approximately $650,000 on an addition to its automobile-body manufacturing plant here. Between 2000 and 2500 men will be employed. Bodies for Chevrolet division are made at this plant.

NEW KENSINGTON, PA.—Braeburn Steel Co., Norman I. Stotz general superintendent, suffered fire damage to plant recently.

RUTLAND, VT.—John A. Gilbert has opened a machine shop for tool making, repairing and grinding automobile cylinders.

East Central

CHICAGO—Mills Novelty Co., 4110 Fullerton avenue, manufacturer of slot machines, has permit to build a 1-story, 108 x 117-foot tool room to cost about $23,000.

CHICAGO—M. Leitner, 2322 Ogden avenue, operator of a tin and sheet metal works, has permit for a 1-story, 25 x 55-foot plant addition costing about $3000.

CHICAGO—Hess Warming & Ventilating Co., manufacturer, 1211 South Western avenue, is receiving bids through W. H. Tomlinson, Morris building, Joliet, Ill., for a 2-story manufacturing plant addition to cost about $100,000.

CHICAGO—Munson Steel & Tube Co., 1550 West Forty-fourth street, manufacturer of boiler tubes, has leased 10,000 square feet in the Ashland Industries Building Corp. properties, Ashland avenue and Seventy-fourth street.

HARVEY, ILL.—Whiting Corp., 157th street, maker of cranes, hoists and railway specialties, contemplates rebuilding pattern shop that was damaged by fire.

KEWANEE, ILL.—Walworth Mfg. Co., 88 Pearl street, Boston, will build a 2-story plant building adjoining its gray iron foundry here for the production of valves and parts.

MARION, ILL.—Central Illinois Public Service Co., Springfield, Ill., has awarded contract to Austin Co., 16112 Euclid avenue, Cleveland, for construction of a warehouse here to cost $100,000. Building will be 100 x 300 feet, and heating and lighting equipment will be installed.

ROCKFORD, ILL.—Illinois Bell Telephone Co., 212 West Washington street, Chicago, is asking bids for a 1-story storage and distributing plant here. Dyer & Madherny, 38 South Dearborn street, Chicago, are architects.

SPARTA, ILL.—Stuart Aero Products Inc. is a new industry located here and which will be in operation soon in the McKelvey plant building. Machinery is now being installed.

STREATOR, ILL.—Plant of Metal Stamping Corp., manufacturer of carpet sweepers, was virutally destroyed by a recent tornado. Approximately 500 employes were thrown out of work.

DETROIT—City, public lighting commission, advises that Lendzon Construction Co., 5765 Chene street, has contract for $100,000 substation at Lawton and Joy roads. (Noted May 29.)

HOLLAND, MICH.—Holland Furnace Co., Twenty-second and Columbia streets, contemplates building a plant addition that will cost $100,000.

HOWELL, MICH.—Howell Electric Motors Co., manufacturer, has plans for a 2-story plant to cost approximately $40,000, and Architect R. S. Gerganoff, North Washington street, Ypsilanti, Mich., recently began to receive bids.

PORT HURON, MICH.—American Enameled Magnet Wire Co., Muskegon, Mich., subsidiary of Electric Autolite Co., Toledo, O., will spend approximately $90,000 on alterations to the Port Huron Engine & Thresher Co. plant here, in moving its manufacturing activities to this city. Wire company, maker of wire for the automotive, radio and electrical industries, would employ about 300 men.

SAGINAW, MICH.—Wilcox Rich Corp., Rust

(*Continued on Page* 129)

Machinery

May Sales Compare Poorly with Last Year, Showing No Marked Revival—Grigsby-Grunow Subsidiary's Purchases Increased

LAGGING sales placed total business for May anywhere from 25 to 40 per cent of last year's figure for the same month. Two strong accounts in the Chicago district have helped to better this rate slightly there. Majestic Household Utilities Corp., a Grigsby-Grunow subsidiary, and the Nash Motors Co., have made extensive purchases, increased requirements of the former putting total equipment orders for this interest close to $3,000,000. In New York territory the federal government is taking a number of tools, including a milling machine, reamers, pipe working tools and engine lathes. Resumption of production by many interests will not require much additional equipment since they are already tooled for capacity operation and are far from that point.

New York, June 3.—Machine tool buying continues limited, sales being confined to one or two units at a time. Inquiry is also light and general industrial conditions indicate no pronounced improvement during the summer. The federal government is taking a few tools, including a motor-driven boring, drilling and milling machine for New York. This went to a Baltimore dealer. A similar tool for San Francisco also was placed. The same buyer has placed orders for reamers and some pipe working tools. Five engine lathes will be bought next week for Panama. Shop improvements for Wright Field, Dayton, O., also call for a fair list of miscellaneous equipment, including a number of furnaces.

Several radio builders are planning to resume production in a larger way within the next few weeks. However, they are generally well equipped and more activity is not expected to bring out much inquiry for tools. The same applies to the aircraft engine builders. With but one or two exceptions airplane engine builders have been down to skeleton forces. One of the largest interests is scarcely operating one machine in four. Foundry activities however, indicate some stepping up in the production and assembly lines within the next month. Here again little increase in machine demand may be expected. Engine builders bought heavily last year and generally have equipment to carry a large increase in production for some time. The same is true of refrigeration equipment builders. They also bought heavily and are well tooled to cover any production increase as are several other industries.

Export business holds fairly steady. Textile machinery builders report a spotty demand, with most sizable orders coming from southern mills.

Robbins & Meyers Inc., Springfield, O., was low bidder on 10 electric hoists for the government arsenal at Frankford, Pa. Bids are being taken on one 10-ton bridge crane by the department of yards and docks for the Philadelphia navy yard.

Worcester, Mass., June 3.—New England Fibre Blanket Co. has ordered ten looms from Crompton & Knowles Loom Works for its new plant in Worcester for the manufacture of blankets used in printing presses from the raw wool to the finished product. Considerable other machinery will be needed. The general machinery market is still quietly spotty.

Pittsburgh, June 3.—Machine tool sales are holding most of their recent gains. Activity still is only fair, however, and lacks briskness. The market currently is devoid of large lists on inquiry, the American Bridge Co. having completed purchases for its Ambridge, Pa., plant. Westinghouse Electric & Mfg. Co. continues to place tools from time to time and other buying is limited generally to orders for single tools. Inquiry is fair and although it includes few large projects, pending work still involves considerable machine tool equipment.

Chicago, June 3.—Machine tool sales offices report orders ranging from 25 to 40 per cent of a year ago, while several houses report billings as much as 60 per cent of last year. May sales were below March and April. Two accounts have been adding substantially to what little scattered business develops. These are Majestic Household Utilities Corp. and Nash Motors Co. The former still has equipment to buy, and the total orders for the Majestic corporation will amount to about $3,000,000, according to official statement of the company, instead of $1,500,000 as originally reported.

A committee of the Chicago board of education has made its recommendations for the 18 lathes and other tools for Austin High school, and final closing is expected shortly. A rod turning machine and other equipment is to be bought for the South Division continuation school. Bendix-Stromberg Carburetor Co., formerly Stromberg Motor Devices Co., which is being re-located at South Bend, Ind., from Chicago, is to have new equipment for the plant building erected for this unit of the Bendix Aviation Corp. Northern Pacific railroad, at St. Paul, is taking bids on new equipment for a machine shop addition at Glendive, Mont. Machine tool prices are fairly steady. Dealers are carrying heavier stocks than for some time, as builders are making deliveries without difficulty.

Cleveland, June 3.—Reports from dealers indicate that May sales were about on a par with April but ranging from 40 to 60 per cent off from last year's business for May. A large builder of turret lathes reports plant operations of a reduced day shift working only four days a week. Republic Steel Corp. has completed equipment purchases for maintenance work in connection with its welded pipe plant, where it is understood electric welded pipe up to 24-inch diameter will be produced. Youngstown Sheet & Tube Co. also will make electric welded pipe but by a different process and has placed orders for a large volume of equipment. Business in the Detroit territory is slow, sales to automobile plants being few. Ford Motor Co. buys an occasional machine. Buick has completed its recent program of equipment buying.

Rail Steel Properties Determined by Tests

Endurance properties of some special heat treated rail steels and medium manganese rail steels have been determined by the bureau of standards, Washington, which has conducted a series of tests at the request of the special joint subcommittee of the rail manufacturers technical committee and the rail committee of the American Railway Engineering association. Similar tests have also been made of a manganese molybdenum rail steel and a zirconium-treated medium manganese rail steel. Data have also been secured as the result of tests of the endurance properties of steel from a transverse fissured rail and a comparison rail from the same heat which did not fail in service.

It has been found that the endurance properties of a rail steel may be appreciably increased by suitable heat treatment of the rail. It was also found that the endurance limit of the steel in the central portion of the head of a heat-treated rail may be appreciably less than in the outer portions of the head. The data on the endurance properties of steel from a rail which failed in track by a transverse fissure confirm previous tests in showing the endurance limit of the steel in a transverse fissured rail to be equal to that found in rail which does not fail under the same conditions of service in track. This work is fully reported in the June number of the bureau of standard's *Journal of Research.*

Construction and Enterprise

(*Continued from Page* 127)

street, has plans through Cowles & Mutcheller, architects and engineers, Adams building, for a 1-story plant addition estimated to cost $175,000. Wilcox Rich Corp. is manufacturer of motor parts.

CINCINNATI—Plant of Union Gas & Electric Co., 667 West Front street, was recently damaged by fire, loss approximating $4000.

CINCINNATI—Dreses Machine Tool Co., 2429 Spring Grove avenue, has awarded general contract to D. Meinken & Son, 2143 Barnard street, for 1 and 2-story plant building to be built on Beekman street, Cumminsville. (Noted Jan. 30.)

CLEVELAND—Eaton Axle & Spring Co., East Sixty-fifth street and Central avenue, suffered damage by fire recently to plant roof. Water damaged machinery and tools although fire loss was slight.

CLEVELAND—Gray Wire Specialty Co., 2100 Abbey avenue, manufacturer of wire frames and guards, advises lease of plant location at the above address. No further expenditures for machinery or building are expected now. Next year new equipment probably will include spot welders, punch presses and power shears.

CLEVELAND—Otis Steel Co. recently announced an expansion program for its Lakeside works to include three 500-horsepower boilers and an annealing furnace for electric steel castings as well as welding and grinding equipment to be added in the electric-foundry department.

CLEVELAND—Fisher Body Corp., East 140th street and Coit road, begins construction immediately on a plant addition that will cost approximately $500,000. New unit will be used for Chevrolet body production and is expected to be completed within four to five months. A large part of the construction cost will be spent on machinery. L. R. Scafe is general manager at Cleveland. (Noted May 1.)

COLUMBUS, O.—Storeroom of the Shilling Foundry Co., 688 Henry street, was damaged by fire recently.

TIPPECANOE CITY, O.—Davis Bronze & Aluminum Foundry, headed by Harry Davis, 1003 West Race street, Troy, O., was recently started. Company is located at North Second and Walnut streets and will specialize in the production of brass, bronze and aluminum castings.

TOLEDO, O.—Toledo Machine & Tool Co., 1422 Hastings street, is building a plant addition costing about $20,000. Contract has been placed with Henry J. Speiker Co., 1400 Elm street.

WOOSTER, O.—Board of public affairs recently received bids for remodeling the municipal engine house. Unit upon completion will be 42 x 72 feet.

WHEELING, W. VA.—Wheeling Mold & Foundry Co. has conveyed a strip of land in North Warwood to the Wheeling Steel Corp. to be used for part of the addition to the Ackermann Mfg. Co. plant. The latter company manufactures sheet metal stampings and canclosing machinery.

BARRON, WIS.—City light and water commission has accepted the bid of Fairbanks, Morse & Co., Beloit, Wis., to furnish and install a new diesel engine unit at a price of $44,850.

BEAVER DAM, WIS.—Beaver Dam Pattern Co. has broken ground for a 1-story shop addition. Building will be 40 x 95 feet and present working force of 20 men will be doubled upon completion.

HARTFORD, WIS.—Rollin Abbott, clerk, closed bids June 3 for furnishing the city water department one turbine-type deep-well pump and one centrifugal-type pump for stationary fire service.

HORICON, WIS.—Van Brunt Mfg. Co., manufacturing seeding machines, grain drills and other farm implements, has awarded contracts for a 1-story brick and steel shop addition, 87 x 120 feet, estimated to cost about $50,000 with equipment, F. H. Clausen is president and treasurer.

MILWAUKEE—Jambor Tool & Stamping Co., 1261 Thirtieth street, has let contracts for a 45 x 60-foot shop addition. Unit will be two stories and will cost $35,000 complete.

MILWAUKEE—J. M. Nash Co., 842 Thirtieth street, manufacturer of machinery and tools for furniture and woodworking plants, is taking bids for the erection of a 2-story addition, 30 x 120 feet. Estimated cost, $25,000.

MILWAUKEE—Wrought Washer Mfg. Co., 46-54 Bay street, will build a plant addition to include a rolling mill and electrically powered equipment that will cost approximately $125,000. Fred Doepke is president of the company.

MILWAUKEE—Public utilities committee of Milwaukee common council has approved installation of a 1,500,000-gallon steel tank at Martin drive and McKinley avenue, to improve water pressure in that district from the city waterworks plant. A tank of similar size is now being installed in the Jackson park district at a cost of $125,000. H. P. Bohmann is superintendent of the water department.

RIPON, WIS.—Wadhams Oil Co., 369 Clinton street, Milwaukee, manufacturer of cylinder oil, suffered $200,000 fire loss recently when seven tank units were destroyed here.

RIPON, WIS.—Plant of Acme Handle Co. here was recently damaged by fire, loss approximating $25,000. Company, manufacturer of picks and handles, has home offices at 228 Orient avenue, Jersey City, N. J.

STURGEON BAY, WIS.—Public utility commission is considering bids on three tubular return boilers, three stokers, one water heater and one year's supply of coal. C. C. Cheesman is secretary.

WAUWATOSA, WIS.—Board of public works is advertising for bids to furnishe the municipal waterworks department two 1000-gallon centrifugal pumps and one deep-well turbine for an artesian well completed.

Southern States

BRIDGEPORT, ALA.—Alabama Power Co., 600 North Eighteenth street, Birmingham, Ala., will enlarge its substation here.

JACKSONVILLE, FLA.—Continental Can Co. Inc., 1 Pershing square, New York, has acquired a plant building here on Grand boulevard and will install equipment for the beginning of operations soon. (Noted Feb. 20.)

CHATTAHOOCHEE, GA.—City of Atlanta, W. P. Price purchasing agent, will build a 2-story, 30 x 40-foot boiler house addition here.

MONROE, LA.—Twin City Motor Co., Grand and Mulberry streets, has let contract to L. D. Davis, West Monroe, La., for repair shop facilities in connection with garage and sales units.

OKLAHOMA CITY, OKLA.—Pallady Welding Co., B. B. Pallady owner, 415 West Fourth street, has awarded contract for a 1-story, 50 x 100-foot plant costing approximately $25,000 to Harry Reynolds Construction Co., Franklin building.

JACKSON, TENN.—Town recently awarded contracts to build a $500,000 municipally-owned light and power plant.

DALLAS, TEX.—Texas Potash Corp., Republic Bank building, will build a refining and boiler plant in connection with plans for a potash mining project near here.

WICHITA FALLS, TEX.—Wichita Falls Foundry & Machine Co. recently increased its capital stock from $75,000 to $100,000 to provide for expansion.

West Central

SIOUX CITY, IOWA—Kari-Keen Mfg. Co., Cecil H. Myers president, having acquired the Irving Engineering Co., Buffalo, manufacturer of automobile heaters and radiator shutters, will move plant and equipment of the latter company here.

ST. PAUL—H. J. McDermott, 489 Como place, has a building permit for a small foundry. Estimated cost $2000.

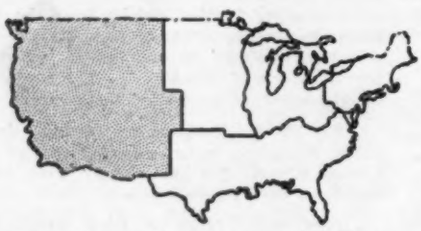
KANSAS CITY, MO.—American Steel Co., D. L. Smart secretary, is erecting a shop and office building addition, 50 x 93 feet.

KANSAS CITY, MO.—Kansas City Oxygen Gas Co., 2012 Grand avenue, has plans through Charles A. Smith, architect, 800 Finance building, for a 1-story manufacturing plant to be built at Woodswether road and Madison avenue. Industrial tract of 17,000 square feet was recently purchased.

ST. LOUIS—Shop building, four stories, 101

x 150 feet, will be built on Thomas street, for the board of education, 911 Locust street. Bids will be received also for a 1-story, 70 x 150-foot power house.

ST. LOUIS—Union Electric Light & Power Co., Twelfth and Locust streets, has let contract for power substation addition, previously reported as planned, to Fruin Colnon Contracting Co., Merchants LaClede building. Unit is 1-story, 33 x 52 feet. (Noted Feb. 27.)



Western States

LOS ANGELES—National Standard Co., Niles, Mich., manufacturer of jacks, pumps and tire accessories, will add about 10,000 square feet to productive capacity with the building of a plant here. W. F. Harrah is president of the company.

SAN FRANCISCO—Pacific Coast Steel Co., 111 Sutter street, has plans to build four warehouse units at Mariposa and Third streets.

SAN FRANCISCO—Eng-Skell Co., 208 Mission street, plans to build a plant at Howard and Russ streets, for the manufacture of soda water fountains and equipment. Cost estimated will be $80,000.

SANTA CLARA, CALIF.—University of Santa Clara has awarded contract to H. C. Miller, Stevens Creek road, for a 1-story shop addition that will cost about $50,000.

SANTA MONICA, CALIF.—Douglas Co. Inc., manufacturer of aircraft, has awarded contract to L. B. Norman, Georgiana avenue, for a 40 x 240-foot plant addition.

GLENDIVE, MONT.—Northern Pacific railroad is to build a 1-story machine shop addition here to cost about $30,000. Inquiries are now out for equipment.

GRANTS PASS, OREG.—R. W. Myers and C. H. Lee, 58 Sutter street, San Francisco, are consulting engineers for a proposed hydroelectric development estimated to cost $25,000,000 to be built near here on the Illinois river.

IRONTON, UTAH—Pacific States Cast Iron Pipe Co. will build a 1-story plant addition here. Estimated cost, $50,000.

SEATTLE—Wade & Co., 1122 West Spokane street, are building a 50 x 100-foot machine shop at 3449 Eleventh avenue.

Canada

CALGARY, ALTA.—Research Engineering Co. will build an absorption plant in Turner valley, near here, at a cost of $300,000.

NEW WESTMINSTER, B. C.—Border Canning Co. Ltd. is completing arrangements for manufacture of its own cans. The plant is being enlarged and machinery for same will be installed without delay.

VANCOUVER, B. C.—Vancouver Casket Co. Ltd., 1650 West First avenue will build a $15,000 plant addition at 291 East Second avenue, and has awarded general contract to George Duncan, 170 East Broadway.

VANCOUVER, B. C.—According to R. W. Mahew, president of the Sidney Roofing & Paper Co. Ltd., steps will be taken immediately for the erection of a $200,000 plant for the manufacture of insulation board.

VANCOUVER, B. C.—Peterson & Cowan Elevator Co. Ltd., 333 Cambie street, has let general contract to the Dominion Construction Co. Ltd., 509 Richards street, for a new manufacturing plant at 150 East Cordova street. Fred T. Jamieson is vice president of the company.

CHIPPEWA, ONT.—Norton Co. of Canada Ltd., 3 Beach road, Hamilton, Ont., has awarded contract for a 2-story addition to abrasive manufacturing plant here. Estimated cost, $50,000.

HAMILTON, ONT.—W. H. Cooper, 42 James street north, has the contract for the 4-story plant addition on Napier street for the B. Greening Wire Co., Queen street. Addition is 50 x 100 feet. (Noted May 8.)

KINGSTON, ONT.—Public utilities commission, C. C. Folger manager, is receiving bids for a 7,000,000-gallon per day centrifugal pump and synchronous motor pump. It is also proposed to purchase a new diesel engine.

KIRKLAND LAKE, ONT.—Teck Hughes Gold Mines Ltd. proposes to start work at an early date on the erection of a new 300-ton unit to its mill here. This will be followed later by a second unit of the same capacity. Foundations are now under construction.

ST. THOMAS, ONT.—St. Thomas Stamping & Enameling Co. Ltd., has plans through J. T. Findlay, architect, 430 Talbot street, for additions and changes to enameling plant, expenditure to amount to approximately $100,000.

TORONTO, ONT.—C. Beck Co., Ltd., 10 Parliament street, has let contract to J. Brodie Costruction Co., for the erection of a one-story plant addition, 70 x 130 feet.

TORONTO, ONT.—Gilbert & Barker Mfg. Co., Springfield, Mass., manufacturer of gas machinery, has begun construction of a manufacturing plant here. New unit will make gasoline handling equipment for the Canadian trade.

TORONTO, ONT.—James Morrison Brass Mfg. Co. Ltd., 93 Adelaide street, has plans through Architects Catto & Catto, 1 Wellington street east, and bids are being received for a 4-story plant addition to cost $175,000.

WALKERVILLE, ONT.—Colonial Tool Co., 8432 Butler street, Detroit, manufacturer, has acquired the Peabody building here and will install machinery and equipment for manufacturing purposes. Operations are expected to be under way within a few weeks.

Recent Incorporations

KEARNY, N. J.—Sheetfed Rotary Press Co. has been incorporated with $50,000 capital by William K. Friedman, 1440 Broadway, New York, to manufacture printing presses.

NEWARK, N. J.—Eureka Iron Works has been incorporated with $100,000 capital by Phillip A. Donnelly, 164 Market street, to deal in structural iron.

NEWARK, N. J.—Sharp & Van Fleet Mfg. Co. has been incorporated with $50,000 preferred and 1500 common shares by William P. Braun, 790 Broad street, to manufacture boilers.

NEWARK, N. J.—Valsburg Screen Door & Porch Mfg. Co. has been incorporated with $120,000 capital by John P. Marinaro, 261 South Eighth street, to manufacture screens.

NEWARK, N. J.—Allied Engineering & Mfg. Co. Inc. has been incorporated with $50,000 capital by Ranzenhofer & Ranzenhofer, attorneys, 683 Main avenue, Passaic, N. J., to manufacture tools.

BROOKLYN, N. Y.—S. Westdahl Machine Co. has been incorporated with $15,000 capital by H. A. Smith, 44 Court street, to deal in electrical devices.

BROOKLYN, N. Y.—Audio Engineering Corp. has been incorporated with $10,000 capital by S. Graham, 11 Park place, New York, to operate a machine shop.

NEW YORK—Sheaway Machine Co. has been incorporated with $30,000 preferred stock and 200 common shares by Bohleber & Ledbetter, 15 Park row, to deal in printing machinery.

NEW YORK—Young Steel Pile Corp. has been incorporated with $50,000 capital by J. J. Traub, attorney, 291 Broadway, to engage in engineering.

NEW YORK—Jack A. McKeage has been incorporated with 200 common shares by A. L. Freeman, 233 Broadway, to operate a machine shop.

SYRACUSE, N. Y.—General Pressed Metal Corp. has been incorporated with 200 common shares by Brown, Fraser & Black, Hill building, to deal in cutlery.

UTICA, N. Y.—Utica Skyways Inc. has been incorporated with $25,000 capital by Pratt & Fowler, 506 United Gas & Electric building, to furnish airplane service and instruction, manufacture airplanes and accessories.

OKLAHOMA CITY, OKLA.—Mid-Continent

New Construction and Enterprise

Metal Alloys Co. has been incorporated with $50,000 capital by Ford L. Lawton to manufacture metal alloys for oil field uses.

DAYTON, O.—Ideal Foundry & Machine Co. has been incorporated with $5000 and 200 no par shares by Joseph M. Conroy Co., 900 Albany street.

DAYTON, O.—Paragon Tool & Supply Co. has been incorporated with $75,000 capital by Frank B. Moorman, 501 East Third street, to manufacture tool and mill supplies.

EMAUS, PA.—Rodale Mfg. Co. has been incorporated with 10,000 no par shares by Joseph Rodale, 1925 Quentin road, Brooklyn, N. Y., to manufacture and deal in electrical appliances, wiring devices, hardware of all kinds and electrical specialties.

ERIE, PA.—Patterson & Sterling Inc. has bene incorporated with $25,000 capital by Marian Sterling, 119 East Twelfth street, to manufacture and deal in ranges, furnaces and sheet-metal goods.

ERIE, PA.—Corry-Erie Mfg. Co. has been incorporated with $20,000 capital by Thomas W. Spofford, 1039 West Twenty-fourth street, to manufacture and deal in machinery of all kinds and appliances, apparatus and devices thereof.

JESSUP, PA.—Simler Safety Razor Corp. has been incorporated with $10,000 capital by Charles Sobleskie, 408 Second avenue, to manufacture and sell safety razors and blades.

PHILADELPHIA—Loeben Ornamental Metal Works Inc. has been incorporated with $5000 capital by John Leise, Fairview, Camden, N. J., to manufacture and deal in ornamental metal work and metal products of any kind.

PHILADELPHIA—Hess Machine Works has been incorporated with $10,000 capital by J. Arthur Hess, 834 South Fifty-sixth street, to build, install and generally deal in machinery, machinery parts, metal products and mechanical devices of all kinds.

PITTSBURGH—Penn-Ohio Steel Co. has been incorporated with $5000 capital by M. Lukie, 603 Farmers Bank building, to deal in fabricated tubes and tubular products.

PITTSBURGH—Gardner's Inc. has been incorporated with $50,000 capital by Robert Steele Jr., 1532 Belasco avenue, to manufacture, repair and deal in machinery and equipment for the generation of electricity.

PITTSBURGH—Wilson Products Inc. has been incorporated with $5000 capital by Oliver Evans, 1907 Henry W. Oliver building, to manufacture iron and steel and metal products of every description.

PITTSBURGH—Cable Accessories Corp. has been incorporated with $150,000 capital by Howard K. Walter, 5256 Wilkins avenue, to manufacture and generally deal in electrical apparatus, parts, accessories and insulating materials.

HOUSTON, TEX.—Longreach Machine Works has been incorporated with $5000 capital by J. V. Scott, 1122 Bissonet avenue, to design and erect engineering structures.

CHARLESTON, W. VA.—West Virginia Machine Co. has been incorporated with $25,000 capital by W. E. Gilkesin, 113 Oakhurst street, Bluefield, W. Va.

CALGARY, ALTA.—Postograph Corp. Ltd. has been incorporated with $50,000 capital stock by Montague Moore and George H. Andrews, to manufacture and deal in automatic machines.

KITCHENER, ONT.—Ball Bros. Ltd. has been incorporated with $200,000 capital stock by Harry J. Ball and John H. Schofield, to carry on the business of building contractor and manufacturer of builders' materials.

LONDON, ONT.—Garrett-Callahan Ltd. has been incorporated with $10,000 capital stock by Jared Vinig and William E. Dyer, to manufacture and deal in boiler preservatives, rust eradicators, tools and appliances.

LONDON, ONT.—Bobbs Hardware Co. Ltd. has been incorporated with 50,000 no par shares by Harold Carrothers Logan and Claude C. Savage, to manufacture and deal in hardware, electrical apparatus and machinery.

TORONTO, ONT.—General Steel Construction Ltd. has been incorporated with $40,000 capital stock by Samuel M. Mehr, attorney, Canadian Pacific railway building, to engage in the construction of buildings.

TORONTO, ONT.—Miller Printing Machinery of Canada Ltd. has been incorporated with $50,000 capital stock by Henry G. Donley, 232 Glenrose street, to manufacture and deal in printing machines and accessories.

TORONTO, ONT.—Gatehouse Bros. Ltd. has been incorporated with $40,000 capital stock by Grey Hamilton, attorney, Northern Ontario building, to carry on the business of contractor and manufacturer of building materials.

TORONTO, ONT.—Miller Van Dyke Construction Co. Ltd. has been incorporated with 1300 no par shares by Henry Borden, 25 Nanby street, to carry on the business of general contractor and engineer.

MONTREAL, QUE.—Canadian Nye Incinerator Corp. Ltd. has been incorporated with $50,000 capital stock by Aime S. Bruneau, attorney, 275 St. James street, to manufacture and deal in incinerating and crematory machinery.

MONTREAL, QUE.—Comet Oil Burner Co. Ltd. has been incorporated with $200,000 and 50,000 no par shares by Carl G. Davidson, 635 Belmont street, to manufacture and deal in oil burners, stoves, radiators and furnaces.

New Trade Publications

NIBBLING MACHINES—Andrew C. Campbell Inc., Waterbury, Conn., in a new catalog describes its complete line of nibbling machines with detailed description of how they operate.

REFRACTORY CEMENT—A leaflet by E. J. Lavino & Co., Philadelphia, describes its chrome ore cement for refractory cementing and patching furnace linings.

UNIT HEATER—Buffalo Forge Co., Buffalo, N. Y., describes in a current bulletin a unit heater with twin fans, with rating tables and dimension diagrams.

INDUSTRIAL LOCOMOTIVES—Heisler Locomotive Works, Erie, Pa., in a 32-page booklet presents various types of its industrial locomotives, designed for coal mining and similar purposes.

PAINT FOR METALS—New Jersey Zinc Sales Co., New York, has issued a booklet on the painting of galvanized steel, which takes up problems relating to protection of zinc-coated surfaces by paint.

SPECIAL MACHINES—City Machine & Tool Works, Dayton, O., is circulating a leaflet on toolroom equipment, tools, dies and special machinery, especially designed for plants desiring to enlarge toolroom facilities at small expense. Illustrations show many of the devices.

VALVES—Edward Valve & Mfg. Co., East Chicago, Ind., has issued a bulletin on its high pressure valves, giving four reasons for their use in power plants. Ample illustrations show the valves and details, while the text explains their application.

ELECTRICAL DEVICES—Two bulletins by the Sangamo Electric Co., Springfield, Ill., present the company's electrically-wound time switch, which is based on the same principle as its electric clock, and its watthour meter. Each is illustrated and full description of the devices is given.

FURNACES—Chapman-Stein Co., Mt. Vernon, O., has assembled into a booklet some of its advertisements of the past year as a presentation of developments and engineering contributions the company has made recently to the steel industry. It covers a range of equipment designed for making better steel.

INGOT IRON—American Rolling Mill Co., Middletown, O., is distributing a booklet with the title, "A Visit to Armco with the Iron Master". It is based on a talk given by the Iron Master during recent radio programs and contains an illustrated story of a visit to the company's plants.

MATERIAL HANDLING—An 8-page illustrated bulletin by the Northern Engineering Works, Detroit, covers the subject of materials handling in a medium-sized foundry. The new foundry of the Semi-Steel Test Foundry Co., Chicago, is the subject and installation of equipment for handling its materials and products is described and illustrated fully.

CO-OPERATIVE MARKETING—Metropolitan Life Insurance Co., New York, through its policyholders service bureau, has compiled a booklet embodying the results of a survey of special forms of co-operation by independent business enterprises outside the scope of regular trade association activities. It deals with present developments in a new field, in which underlying principles are not yet clearly in evidence.

ELECTRICAL DEVICES—General Electric Co., Schenectady, N. Y., has published various bulletins recently on many of its products, including: Industrial heating devices; industrial haulage locomotives; hatchway limit switches; general purpose synchronous motors; drum controllers; synchronous motors for driving metal rolling mills; nonmetallic gears and blanks; industrial control, a catalog.

ELECTRIC FLOW METERS—Brown Instrument Co., Philadelphia, manufacturer of pyrometers, thermometers and indicating, recording and controlling instruments, has issued a book of instructions for installation and care of electric flow meters, revised from a previous issue. It explains the mechanism and gives instructions for adjustment of correction factors for pressure, quality and superheat of steam.

Pipe and Tube Prices—Plate Extras

Steel Pipe

(Base price $200 per ton)

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2 points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	47	21½
¼ and ⅜-inch	53	27½
½-inch	58	44½
¾-inch	62	50½
1 to 3-inch	64	52½

Lap Weld

2-inch	57	43½
2½ to 6-inch	61	49½
7 to 8-inch	58	45½
9 and 10-inch	56	43½
11 and 12-inch	55	42½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	43	26½
¼ and ⅜-inch	49	32½
½-inch	55	44½
¾-inch	60	49½
1 to 1½-inch	62	51½
2 to 3-inch	63	52½

Lap Weld

2-inch	55	44½
2½ to 4-inch	59	48½
4½ to 6-inch	58	47½
7 to 8-inch	54	41½
9 and 10-inch	47	34½
11 and 12-inch	46	33½

DOUBLE EXTRA STRONG

Butt Weld

⅛-inch	44	34½
¼ to 1½-inch	47	37½
2 to 2½-inch	49	39½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ to 3¾-inch	54 off
4-inch	57 off
4½ to 6-inch	46 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1¼-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discounts reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	61 off
1⅛ and 1⅛-inch	53 off
1¾-inch	37 off
2 and 2¼-inch	32 off
2½ and 2¾-inch	40 off
3-inch	46 off
3¼ and 3½-inch	48 off
4-inch	51 off
4½, 5 and 6-inch	40 off

SEAMLESS HOT ROLLED

1¾-inch	37 off
2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ and 3½-inch	54 off
4-inch	57 off
4½, 5 and 6-inch	46 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....55 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Net price per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inch long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot to but not including 7.65 pounds square foot.... .20c

Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, class A-B....	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Floor plates are furnished only as rectangular plates in stock steel grade. No physical tests will be made on floor plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Three feet and over up to published limit of length, but not over 80 feet	No extra
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts (Including straight taper plates)

Additional extra ..... .20c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .50c